The RUBBER AGE

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Late News of the Rubber Industry

Goodrich Issues Stock to Add $16,000,000 to Capital

STOCKHOLDERS of the B. F. Goodrich Company will be asked at their annual meeting on April 17 to act on a proposal to increase the number of shares of common stock without par value from 1,000,000 to 1,500,000. Subject to such an increase being authorized by the stockholders, 207,728 shares of the new common will be offered for subscription by the present shareholders at $81 a share on the basis of one share of new common stock for each four shares held at the close of business on April 3. The right to subscribe under the plan will expire on April 24.

The sale of the entire issue at the stated price would result in proceeds to the company of $16,825,968, which will be used for plant construction and development in Georgia, California, Canada and elsewhere and to increase the working capital of the company. The company has contracted to sell the entire issue of 207,728 shares subject to the shareholders' approval and subject to the stockholders' subscription rights. The new issue will participate in the regular quarterly dividend of $1 a share declared by the board of directors to be payable on June 1 to stock of record as of May 10.

The B. F. Goodrich Company has announced its intention of constructing a tire and tube factory at Atlanta, Ga., at a cost of more than $1,500,000, while at the same time expanding its tire fabric mill properties at Thomaston, Ga., at an expense of more than $1,000,000. A recent report states the company is planning to acquire the fabric mills at Kent, O., from the Mason Tire & Rubber Company. These mills have been idle since the Mason company went into the hands of receivers last year, although the tire plant has been put in operation following the reorganization of the company.

Ajax Rubber Company Shows Loss of $2,063,970 in 1928

REPORTS of the Ajax Rubber Company, Inc., and subsidiaries for the year ended December 31, 1928, show a net loss, after crediting a reserve of $500,000 for crude rubber fluctuations set aside at the end of 1927, amounting to $2,063,970, after interest, depreciation, inventory adjustments and other charges. This compares with net losses of $1,990,698 in 1927 and $292,808 in 1926 and a net profit of $1,005,069 in 1925.

Inventory adjustments, including price decline rebates and loss from write-down of inventories in excess of the $500,000 reserve provided, totaled $312,979. Other charges included a loss of $328,124 for mold and material obsolescense and a loss of $170,570 from the sale of machinery and maintenance expenses at the Trenton, N. J., factory of the company.

The consolidated balance sheet of the company shows total assets as of December 31, 1928, of $12,361,187, as against the figure of $14,991,815 reported the year previous. Of this total, land, buildings, machinery, etc., are represented by $5,022,369 and goodwill and patents figured at $2,184,875. Cash amounted to $886,579 as compared with $1,278,818 at the end of 1927, and accounts and notes receivable were $1,339,356 as against $2,052,076 the year previous. The value of inventories was figured at $2,667,912 as compared with $4,064,200 at the close of 1927.

Of the company's liabilities, capital stock and surplus were figured at $9,167,826 and gold bonds outstanding at $1,789,000. The capital stock is represented by 880,330 no-par shares. The other liabilities included accounts payable at $719,944, notes payable in 1932 at $500,000, and accrued liabilities at $184,417.

The consolidated income account for the year 1928 compares as follows with the three preceding years:

	1928	1927	1926	1925
Loss aft. exp., etc. ..	$671,498	$1,305,542	‡$1,045,973	‡$1,565,762
Other income	111,815	137,285	159,530	198,804
Total loss	$559,683	$1,168,257	‡$1,205,503	‡$1,764,566
Int., depr., etc.	692,614	822,441	692,872	641,321
Federal taxes	.....	.....	.....	118,176
Invent. adjustm's, etc.	§312,979	.....	805,439	.....
Other charges	*498,694	.....	.....	.....
Net loss	$2,063,970	$1,990,698	$292,808	†$1,005,069

†Net profit. ‡Profit. §Price decline rebates and loss from write-down of inventories in excess of reserve provided. *Includes loss of $328,124 for mold and material obsolescense and loss of $170,570 from sale of machinery and maintenance expenses at Trenton plant.

General Tire and Rubber Plans Plant in Alabama

THAT a $3,000,000 tire and tube manufacturing plant in Birmingham, Ala., or in the Birmingham district, will in all probability be erected by the General Tire & Rubber Company, was indicated by William O'Neil, president, while stopping at that city on March 26. Local newspapers reported that plans have been definitely made for a factory that will employ 500 men for the manufacture of 5,000 tires daily.

It was further reported that the actual site of the proposed plant has already been decided upon, but Mr. O'Neil would not make a statement in this regard. Birmingham, he said, is close to the supply of cotton, and making tires there would save the freight north on the cotton and the return freight on the big drums, or spools, upon which the cotton thread for tire fabric is wound.

During January, Mr. O'Neil, while on a visit to the

An airview of a modern rubber plant—the factory of the Michelin Tire Company, Milltown, N. J.

Pacific coast, admitted that his company is definitely making plans to erect a factory at Los Angeles in about a year, due to the increased volume of business obtained in the far Western states. The Los Angeles plant, it was stated, would employ 2,000 workers and be equal in size to the company's Akron factory which has a capacity of 15,000 tires and 20,000 tubes daily.

The General Tire & Rubber Company has steadily increased its production and sales volume since its establishment fourteen years ago and is now selling tires and tubes to a total value of more than $26,000,000 annually. A $1,000,000 expansion of the company's Akron plant was recently completed.

Fisk Rubber Company to Double Its Common Stock

AT THE annual meeting of the Fisk Rubber Company, held at Chicopee Falls, Mass., on March 27, stockholders approved the proposal of the board of directors to increase the common stock to 2,000,000 or 2,200,000 shares of no par value from 1,250,000 shares. Common stockholders of record as of March 15 have been offered the right to subscribe to one share of additional common stock at $11 a share for each share held.

The company made an underwriting agreement with bankers, for compensation, to obtain like subscriptions for such part of the new issue of 851,306 shares of common stock as are not so subscribed for by the stockholders or their assigns. It is believed, however, that the majority of the common shareholders are exercising their rights to purchase the additional common and that the company will thereby add from $8,500,000 to $9,000,000 to its working capital.

This decision to finance through the sale of 100 per cent additional common is said to reflect fundamentally the desire of the directors and management to utilize to the full the opportunities which are at hand or just ahead for the company. The Fisk Rubber Company, due to exclusive contracts with Willys-Overland and Durant, a big order from Ford and a term contract with the Chrysler Corporation whereby Fisk tires are to be exclusive equipment on all Chrysler, De Soto, Dodge and Fargo cars and trucks, is producing close to 40,000 tires a day with a likelihood of 1929 output reaching 9,000,000 tires. During 1928 the company turned out 6,500,000 tires as compared with 5,565,000 in 1927 and 5,000,000 in 1926.

From this record-breaking original equipment business certain selling arrangements have been evolved that should assure a large replacement market. Fisk is expected to expand its productive capacity by May 1 to 45,000 tires daily, while in 1921 its output was only 20,000 a day. In the past two years alone, the company has had an increase of 50 per cent. It is predicted that in the next few years Fisk will be able to keep pace with the natural growth in the industry by reaching a capacity of 60,000 tires daily without expenditures greater than annual depreciation charges.

The raising of $8,500,000 additional funds will provide a working capital of approximately $31,000,000, or more than 50 cents for each dollar of 1928 sales. The program which the Fisk Rubber Company expects to complete by December 31, 1931, is the retirement of all funded debt and the liquidation of all arrears in preferred dividends, freeing it of heavy interest and sinking fund charges. The funded debt includes $8,359,500 in 5½ per cent notes, due January 1, 1931, $1,266,000 Fisk Tire Fabric Company 6½ per cent bonds of 1935, and an issue of 8 per cent first mortgage bonds due in 1941.

Thermoid Company Issues Stock To Buy Southern Asbestos Firm

IN CONNECTION with the acquisition of control of the Southern Asbestos Company, the Thermoid Company, Trenton, N. J., manufacturer of mechanical rubber goods, has marketed through a group of bankers an additional issue of $1,000,000 7 per cent cumulative preferred stock, an additional issue of $500,000 five-year 6 per cent sinking fund notes, and 85,000 shares of common stock. The preferred stock, which was offered at $99.50 a share, is convertible into three shares of common at any time, and the sinking fund notes carry stock purchase warrants. The common shares were offered at $31 by the banking group, which consisted of Eastman, Dillon & Company, Schluter & Company, Inc., and Oliver J. Anderson & Company.

The Southern Asbestos Company manufactures a complete line of asbestos yarns and textiles and is one of the lowest cost producers in the field. The company's products are used in almost every line of industry, including electrical generating plants, railroads, heating plants, chemical industries, and manufacturers of brake lining, electrical equipment and plumbing and heating appliances. The Southern Asbestos plant is thoroughly modern and its location at Charlotte, N. C., insures an adequate supply of low cost labor.

The Thermoid Company has contracted to acquire approximately 51 per cent of the entire outstanding capital stock of the Southern Asbestos Company, the number of shares to be bought to be not less than 50,050 and not more than 51,000. Common stock of the Southern Asbestos Company has been quoted on the New York Curb Exchange recently at $36 a share, and on this basis the cost of acquiring the control would be approximately $1,836,000 to the Thermoid Company.

Products of the Thermoid Company, which was created only recently as a result of the merger of the Thermoid Rubber Company and the Joseph Stokes Rubber Company, include rubber belting and hose, brake lining, automobile clutch rings and facings, universal joint discs, asbestos packing, and other asbestos and rubber goods. The Southern Asbestos plant is working day and night shifts with sufficient orders to keep in full operation for a year. Inasmuch as the Thermoid Company is a large user of the products of the Southern Asbestos Company, the unification of their interests is expected to be of considerable benefit.

"Acquisition of Southern Asbestos places Thermoid in a strategic position in the asbestos field," says Robert J. Stokes, president of the Thermoid Company. "It can now be sure of a steady supply of asbestos cloth and yarn, in addition to the widened market obtained through distribution of the Southern Asbestos products through our international agencies."

Firestone Forming a Chain Of Super-Service Stations

PLANS for the distribution of gasoline and lubricants as well as tires through a nation-wide chain of super-service stations have been drawn up by the Firestone Tire & Rubber Company, according to statements made by Harvey S. Firestone, president, last month. The announcement was made at Dallas, Tex., following meetings between Mr. Firestone, his sons, Harvey, Jr., and Russell Firestone, and Texas oil refiners regarding the addition of oil products to the Firestone controlled stations. Other conferences were also held with oil company officials in Fort Worth, Tex., and in Tulsa and Oklahoma City, Okla.

No contracts have as yet been signed, Mr. Firestone stated, the present visits being made primarily to familiarize himself with the oil business. Mr. Firestone inspected several oil refineries and announced that arrangements for supplying the new stations with gas and oil will be made as soon as the chain is well started.

As planned, the Firestone controlled stations will supply tires, tubes and batteries made by the Firestone organization and will also sell brake linings, electric light bulbs and numerous other automobile accessories. It was only recently made public that the Firestone Steel Products Company is now entering upon the production of automobile batteries.

The building of Firestone one-stop super-service stations is going forward steadily with 150 already established. Each will be operated by a local dealer financed through the Firestone organization. The chain of one-stop places is the best answer to the problem of economical distribution of automotive supplies, Mr. Firestone said, and at the present time there are too many stations in operation, but too few giving the motorist every service except mechanical repairs.

News of the latest such station was revealed on April 1 when it was announced that the Firestone Tire & Rubber Company had paid $89,000 for the corner fronting on Pease Avenue and Milam Street, Houston, Tex. Contracts are now being let for the construction of a $175,000 Firestone super-service station on this site. Last November it was announced that the Firestone company would build four similar stations in Florida at a total cost of nearly $1,000,000. A station at Jacksonville to cost $250,000, one at Tampa to cost $185,000, and one at West Palm Beach involving an expense of $75,000 were mentioned at the time. The fourth location, at Miami, was said to be intended for the largest of the Florida stations, but no estimate of the investment there was made.

New Corporation Will Manufacture Tire Fabric

ANNOUNCEMENT is made of the formation of the Tire Fabric Corporation, which has leased the mill formerly occupied by the Salmon Falls Manufacturing Company of Salmon Falls, N. H. Elbert H. Shurtleff of New York, recently in charge of the sale of the product of the Beaver Mills at North Adams, Mass., and the Trainer Mills at Chester, Pa., is president of the new corporation. Mr. Shurtleff was formerly connected with the Connecticut Mills and has held executive positions in various New Bedford mills.

Theodore Wood of New York is vice-president. Mr. Wood was for many years vice-president and director of sales of the R. J. Caldwell Company of New York selling the product of the Connecticut Mills, Conn., the Canadian-Connecticut Cotton Mills and the Canadian Manhasset Cotton Company. He is at present president of the Wood VanderPyl Company of New York, crude rubber brokers. This company also operates a commission business on cotton fabric for the rubber trade in United States and Canada.

The treasurer of the new company is Andrew G. Pierce, 3rd, of New Bedford, the son of Andrew G. Pierce, Jr., president of the American Woolen Company. Mr. Pierce has for a number of years been associated with the Pierce cotton mill interests in New Bedford and is one of the younger generation of mill men being developed in New England.

Leasing of the cotton mill by the new organization is being followed at once by manufacturing activities there. Additional equipment is being installed and the present equipment put into first class condition. The plant will have approximately 35,000 spindles and will run full night and day force, making cord tire fabric. It is estimated that approximately 525 hands will be employed and the annual payroll will aggregate $500,000.

Rubber Committee of A. S. T. M. Studying Tests for Belting

DURING the annual spring group meeting of the American Society for Testing Materials, Committee D-11 on Rubber Products held a meeting at the Hotel Stevens, Chicago, Ill., on March 22 to review the status of its work before preparing an annual report. In compliance with a request from the National Electric Light Association the committee has undertaken the preparation of specifications for rubber gloves for voltages not exceeding 8,000 volts to ground.

The committee is now co-operating with a committee of the American Chemical Society in studying physical test methods. The committee is at work on methods of testing belting, placing particular emphasis on the flexure test. In this connection it is also continuing its work on artificial life or aging tests.

The abrasion test is receiving considerable attention at the present time, with various laboratories co-operating in an extensive test program to determine whether any connection can be found between the several methods of test, comparing the result with service tests. The different factors entering into abrasion or wear, such as tear, are being fully investigated.

"The importance of arriving at a satisfactory abrasion test," the committee states, "is appreciated when it is realized of what service a satisfactory test would be in determining suitable compounds. At present it is used as a preliminary test in checking the value of certain new compounds preparatory to putting these compounds into actual service tests. It is necessary, however, to continue these service tests, such as those on rubber tires, maintaining fleets of cars and trucks on the road trying out any compounds that seem to give promise of being superior in quality."

The chairman of the committee is L. C. Conradi, of the Spicer Manufacturing Company, South Plainfield, N. J., and the Secretary, Arthur W. Carpenter, of the B. F. Goodrich Company, Akron, O.

Safety Council's Rubber Section Prepares for September Meeting

AT AN executive committee meeting held last month at Detroit, plans were worked out for the program of the Rubber Section of the National Safety Council in connection with the annual convention during the week of September 29. The Morgan & Wright plant of the United States Rubber Company acted as hosts to the committee during its sessions.

The first day of the September meetings will be taken up by a luncheon and an afternoon session at which W. H. Fleming, assistant production superintendent of the Good-

year Tire & Rubber Company, Akron, O., will speak on the question of "Why Is the Foreman Responsible for Accidents?" A discussion will follow under the leadership of J. E. Lynch of the Fisk Rubber Company, Chicopee Falls, Mass.

The morning session of the second day will be opened by a talk by Garrett Burgess of Garrett Burgess, Inc., Detroit, Mich., followed by a paper on "Handling Solvents in the Rubber Industry" by C. R. Peck of the Protectoseal Company, Chicago, Ill., and a general discussion. The afternoon session will hear technical papers on "Health Hazards," by L. J. D. Healy, Fisk Rubber Company, Cudahy, Wis.; "Vulcanizers," by Verne Shaw, B. F. Goodrich Company, Akron, O.; and "Ten Minutes With the New Employe," by A. M. Williams, Chrysler Motor Corporation, Detroit, Mich.

Reports of the nominating, engineering and satistics committees will be heard on the morning of the third day, followed by a talk on "Safety Kinks" by R. H. Cochran, Kelly-Springfield Tire Company, Cumberland, Md. Five speakers will then talk on the general subject of "What Our Eyes Have Seen During the Past Year," including P. B. Martens, Ohio State Department of Safety and Hygiene; John Loge, General Tire & Rubber Company, Akron, O.; E. W. Beck, United States Rubber Company, New York City; A. M. Dietz, Pennsylvania Rubber Company, Jeannette, Pa.; and S. Mansfield, Goodyear Tire & Rubber Company, Akron, O.

Prior to the annual meeting of the organization, there will be regional safety conferences of the National Safety Council during April, May, and June in several cities.

India Tyre & Rubber Company Shows Profits in First Year

THE India Tyre & Rubber Co. (Great Britain) Ltd., has just held its first annual meeting in Glasgow. Joseph Johnstone, J.P., the vice-chairman, presided. Mr. Johnstone in his address said that the ground and buildings which the company had been fortunate enough to acquire at Inchinnan at a low price had proved to be remarkably well adapted for their purposes. Actual production commenced within six months of the incorporation of the company, the first tire being turned out on July 7 last.

During the months following production rapidly increased. In August it was £4,444, in September £6,781, and in October £14,229. The board decided to increase the productive capacity of the factory by three or four times the original estimate and additional equipment was introduced during the winter months, the output continuing to grow meanwhile. In November it was £20,647, in December £38,112, and for 14 working days in January it was £26,731, the remainder of that month having been taken up with the completion of the new installation. In February the output rose to £44,372, and for April should be up to £80,000 ($400,000), which the board is very hopeful of maintaining with a possibility of improving.

The company has been concentrating on the production of a super range of India tires, and claims to be the only British company exclusively producing these. These tires are especially built for mileage efficiency, which is what the board is aiming at. The company is also producing a heat-proof blue tube specially designed for high speed, heavy duty work, and of the same quality as the tire.

The profits for 1928 amounted to the satisfactory total of £30,945 ($154,725), as against the prospectus estimate of not less than £30,000 for the first year. The company is paying a final dividend on the Preference shares, making with the interim dividend a total of 8 per cent for the year, and also a dividend at the rate of 17½ per cent on the Deferred shares. The managing director estimates the profit for 1929 at £130,000 ($650,000).

To enable the company's success to be consolidated and assured, the directors have decided to increase the capital of the company from £125,000 to £750,000, but will issue only £480,000 of the increased capital, reserving the balance for future necessities if such should arise. W. G. Klaus, president of the India Tire & Rubber Co. of America, was elected to the board in place of P. C. Searles, who retired.

Court Upholds Kelly-Springfield In Maintaining Dealer Contracts

A JUDGMENT rendered in favor of the Kelly-Springfield Tire Company against Paul Zee, a tire dealer doing business principally in Miami, Fla., and also having a store in Syracuse, N. Y., has been upheld in every particular by the New York Court of Appeals, highest tribunal in that state. The suit was brought before a jury in the Supreme Court at Syracuse in January, 1928, and resulted in a verdict for $91,588.03 in favor of the tire manufacturer.

Kelly-Springfield had sued Zee to recover a large balance arising from the sale of tires under a specific written contract entered into between the company and Zee on September 1, 1926, in which there was a clause that its terms could not be changed except with the written consent of the general sales manager or assistant general sales manager of the Kelly-Springfield company. Zee's defense to the suit was that he was entitled to a discount of 15 per cent greater than set forth in the written contract by reason of an arrangement with one of Kelly-Springfield's special representatives. He also claimed he was entitled to a credit for $23,000 for solid tires he had attempted to return to the factory but which Kelly-Springfield had refused to accept, and also that he was entitled to damages in the amount of $25,000 by reason of an alleged breach of warranty made by Kelly-Springfield.

The tire manufacturing company won a complete decision against Zee as the court did not sustain any of his contentions. One of the points of law decided in the case, which is important to sales executives, is that written contracts requiring executive approval as to any changes therein are binding, and that any new agreements with salesmen or others which are contrary to such provisions in the contract will not be enforced by the courts.

Henderson Sees Prosperity For Rubber Industry in 1929

F. R. HENDERSON, president of the Rubber Exchange of New York, addressing a joint meeting of the Shrine Club and local rubber men at luncheon in the Masonic Temple at Akron, O., declared that indications pointed to 1929 being one of the best years in rubber manufacturing that the industry has shown in a long time.

"Prosperity is with us for a long, long visit, in my opinion," he said, "and the rubber companies should share in it generously. Some of our friends across the water have been saying that American prosperity could not last, that it was just a 'flash in the pan' which was bound to go up in smoke, but they were wrong.

"Big business as a whole in the United States today is on a sounder, healthier foundation than it ever has been before. It is conducted along bigger, broader and more humanitarian lines. The day when the workman in many lines of industry was a mere cog in the wheel is passing; today, through the ownership of some securities he shares in the business that employs him. Do not think of prosperity as a boom, but as something which America is always going to have because under modern methods of business prosperity and American industry mean the same thing."

Plantations Find New Profits In the Oil of Rubber Seeds

SINCE an American firm has begun to buy rubber seeds in Malaya and ship them to the United States for oil extraction, considerable interest in the possibility of realizing profits from the bulk sale of rubber seeds has developed among crude rubber producers. Previously it had been estimated that rubber seed oil waste amounted to millions of dollars annually due to the neglect of the hundreds of pounds of rubber seeds that fall to the ground on every acre of plantation property and are allowed to rot, despite the valuable oil extractable from them and the various uses to which the husks and meal might be put.

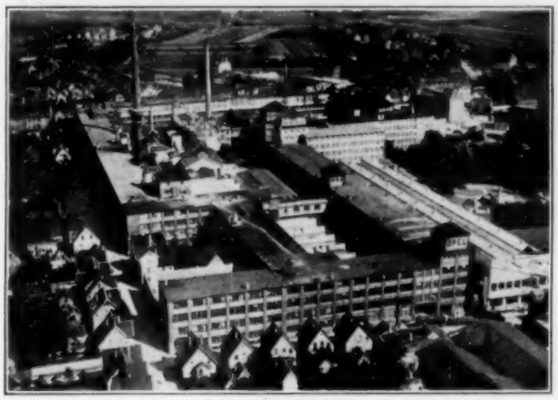
Rubber seeds contain 52 per cent of oil, from which a good quality of dark factice can be made, or with sulfur chloride it forms a white factice darker than that obtainable from colza and castor oils, and resembling that made from linseed oil. The oil can be used in the manufacture of soap and certain paints where slow drying is desired. For most purposes rubber seed oil is a very good substitute for linseed oil and has valuable possibilities when the latter is selling at a high price.

The ink trade and the manufacture of rubber substitutes also have been able to employ this vegetable oil. Experiments in rubber seed meal have been carried on in the Federated Malay States, showing that no saponin or alkaloid is present. The cake is marketed chiefly in the United Kingdom and is used like linseed cake for cattle feed.

It has recently been urged that oil extraction plants be erected locally in rubber producing areas, and Dr. Wolff and J. Hornstra are said to be working on this plan for Java at the present time. The plan calls for the erection of ten plants, one for each 15,000 hectares of planted rubber. Local newspapers suggest that if the seeds can be shipped to America and manufactured at a profit, greater profits should be derived from their local manufacture.

Various estimates of the profits to be derived from the sale of these rubber seeds have been made. The Singapore representatives of the American firm reported as being a customer states that a rubber estate of 2,000 acres supplies about 200 metric tons of seeds during the three-month period when they fall to ground. The selling price is figured at 30.80 florins ($12.38) a ton, of which about half is clear profit to the estate. Another writer states that estate laborers can earn about 3 cents a day collecting rubber seeds in their spare time and that the market price gives the estates a net profit of $6.47 a ton. The oil itself is sold at prices ranging from one to five hundred dollars a ton, depending on the current price of linseed oil.

Between 1911 and 1917 extensive experiments were carried out by the Department of Agriculture of the Federated Malay States and reported in a paper published in February, 1918, by F. G. Spring, agriculturist, and F. W. F. Day, assistant chemist, of the department staff. Supplies of rubber seed oil were sent to paint and varnish manufacturers, who reported it very satisfactory for their purposes although with less drying power than linseed oil. Linoleum manufacturers found it unsuitable, but makers of soft soap stated that it would be adaptable to their purpose and about equal in value to linseed oil or cotton seed oil. A firm manufacturing rubber substitutes also reported that it seemed suitable for the production of such materials. Subsequent tests definitely established the value of Para rubber seed cake as a food for cattle and through experiments at the Imperial Institute at London and the South-Eastern Agricultural College at Wye a market in the United Kingdom was opened for it.



German Firm Bought by General Motors—A view of the Opel Motor Works, Ruesselsheim, Germany, just purchased by the American automobile manufacturer

Goodyear Plans Reclaiming Plant For New Factory in Alabama

C. C. SLUSSER, vice-president and production manager of the Goodyear Tire & Rubber Company, has announced that his company is starting work on a $1,000,000 rubber reclaiming factory at Gadsden, Ala. The new factory, which will be 380 feet long by 100 feet wide, will adjoin the huge Southern tire factory of the corporation now under construction. The general contract has been awarded to the A. K. Adams Construction Company, Atlanta, Ga., and the steel contract to the McClintic-Marshall Company, Pittsburgh, Pa. Work on steel erection was scheduled to start April 1.

The plant will be built in three sections, one of which will be three stories in height and 80 by 100 feet in size. The other two sections will be single-story buildings of saw-tooth construction, one to be 240 by 100 feet and the other to be 60 by 100 feet in size.

The Gadsden reclaiming plant is scheduled for a capacity of 25 tons of reclaimed rubber a day, most of which will be shipped to the Goodyear mechanical goods plant in Akron. This will make three building operations in the South by the Goodyear organization, the tire factory at Gadsden being scheduled for completion in July, and the addition to the company's cotton mills at Cedartown, Ga., to be finished shortly afterward.

In announcing the erection of the new plant, Mr. Slusser gave an interesting summary of the importance of reclaimed rubber in American industry.

"Though it takes two pounds of reclaimed rubber to do the work of one pound of new rubber, still the fact that almost 35% of the rubber used by industry today is reclaim has meant a tremendous saving in the nation's annual rubber bill," he said. "In the last five years the consumption of crude rubber has increased 46%—which incidentally is the exact percentage of the increase in tire output in that period—while the use of reclaimed rubber has increased 160%.

"While price of crude rubber has ranged from $1.30 a pound in 1925 to 19 cents a pound recently, reclaimed rubber can be produced for from eight to ten cents a pound. If all the automobile tires used in this country were reclaimed, they would produce 800,000,000 pounds of reclaim a year. The actual production of reclaim in America, however, was only 346,000,000 last year."

The Goodyear company has had its own reclaiming plant since 1917 at Akron, serving its great mechanical goods factory, but this is its first extension.

Los Angeles—N Center of the P

It Now Ranks Second Only to facturing City—30,000 Ti

By Willard D.

Main Entrance to Goodyear Plant. Group Left to Right: P. W. Litchfield, J. W. Mapel, E. H. Thomas, and J. K. Hough

TODAY Los Angeles has found itself the vortex of dozens of new industries, all seeking the rich advantages of this southwestern location. Each month sees the arrival of new recruits in this great western manufacturing migration which is destined only to stop when the vast Pacific area from South America to the Orient ceases to continue to develop. Lured by the lower freight rates to immediate markets, favorable labor conditions, mild climate, and lower manufacturing costs, the larger rubber companies such as Samson, Goodyear, Goodrich and Firestone have opened new plants in this section.

Starting from a small output of only a few hundred tires per day in 1920 when the Samson and Goodyear plants were the only producers, the daily production in this new territory has now reached the high mark of 30,000 tires and 40,000 tubes with the two additional factories in full operation. Present plant extensions and plans are being prepared to double these figures within another year. Every tire plant is now running to full capacity with demands for greater expansion. The Firestone plant which was recently opened is already breaking out temporary partitions and installing more machines to keep pace with their steadily rising production schedule.

Crude Rubber Imports Increase

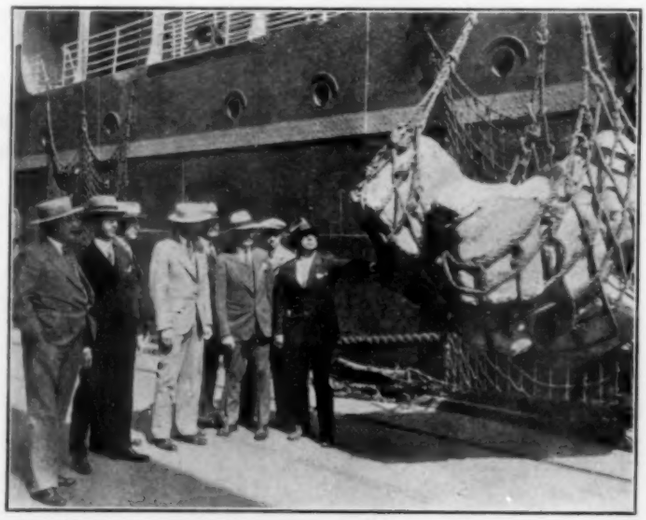
This industrial change has kept pace with the development of the new Los Angeles Harbor which now ranks among the largest shipping centers in the Pacific area. Crude rubber from Sumatra, the Malay Peninsula, and the Dutch East Indies, is arriving at this port in increasing quantities. Last year there were 24,554 tons of crude rubber imported, representing a value of $13,133,316.00. Exports of the finished products from the Los Angeles rubber factories showed 1,323 tons to foreign lands and 7,790 tons in the Inter-coastal service, representing values of $1,118,597.00 and $11,540,000.00. These figures taken from the statistical records of the Los Angeles Harbor Department for 1928 show the growing importance of this section in the rubber exporting field.

With this new emphasis upon Los Angeles as the manufacturing and distribution center of the west, the rubber manufacturing companies have been quick to realize their opportunities in this area. Executives of other tire companies have been making extended visits to this section in order to study the present and future possibilities for establishing branches in this field.

Actual figures show that crude rubber from the Far East can be laid down at Los Angeles harbor at a saving of $7.50 per ton over the rates to Akron. In addition to this savings it is possible to transport the finished products by water through the Panama Canal to the Eastern coast at a very low rate as compared to the same rates out from the Akron factories. Such transportation facilities have been accepted as vital distribution advantages for the new rubber manufacturing center in Los Angeles, which is now second only to Akron.

One Los Angeles tire plant reports its foreign trade at 7% of total production. Another plant ships direct to foreign markets from orders received from the central factory at Akron. The excellent transportation and exporting facilities available in the Los Angeles area have placed a new emphasis upon the Pacific area as the location for future expansion.

Aside from the advantages in serving the Pacific area of two hemispheres the tire factories are giving direct service to their thousands of dealers in the eleven western states. The Goodrich company serves over 3,200 western retailers, the Firestone plant supplies over 3,000, and the



Unloading Crude Rubber at Los Angeles for the Goodrich Factory

New Rubber Pacific Coast

to Akron as a Rubber Manu- Tires are Produced Daily

D. Morgan

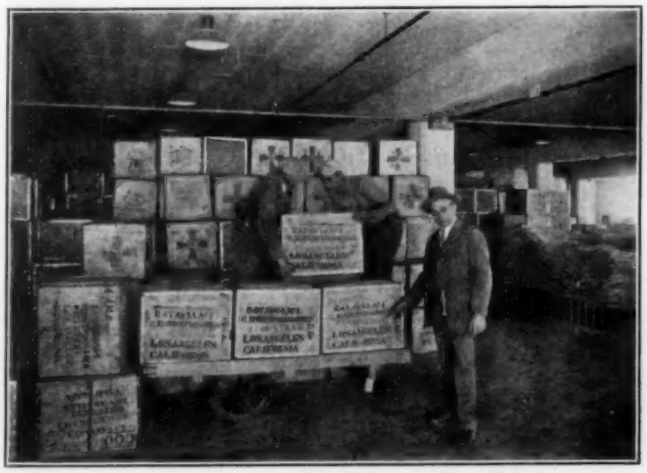
Air View Showing New Development Around the Goodyear Plant, Los Angeles

Goodyear plant nearly 3,500 dealers. In connection with this western distribution direct from the factories it is possible for any retailer to come into the factory and obtain free training in better sales methods or in the best methods of tire repairing and servicing. Such cooperation between the producer and retailer is the most valuable plan in modern merchandising. With the former centralized plants in only one section of the country this plan was more difficult to operate. Consequently the decentralization of the larger tire manufacturing plants means greater economy in production as well as in the final distribution.

The real beginning of the present tire production found its impetus last year with the opening of the new Goodrich and Firestone plants. Goodrich made its first tire in March, 1928, while one year later, in March, 1929, the production had increased to 6,300 tires per day and 5,000 tubes. The plant capacity of 6,500 tires and 5,000 tubes per day has practically been reached.

A similar story may be related about the new Firestone plant which made its first tire in June, 1928. Today the Firestone plant is turning out 4,200 tires and 5,000 tubes daily. By the middle of the summer, according to R. J. Cope, general manager of the Los Angeles plant, the daily production will be over 7,500 tires and 9,000 tubes. Preparation for this expansion is now taking place with the installation of more machinery and the training of more workers.

In the new Goodrich plant all the raw products are received at one end of the factory, while the finished products go out from the warehouse at the other end after going through the various manufacturing processes. This plant is the finest example of straight line production, with the raw product entering one end and going out in its complete form from the other end. All the production takes place on the ground floor, where elevators are unnecessary. This system enables each fabricating unit to check up on the previous one, so that there is no lost time in going from one floor to another or telephoning to another part of the plant. Consequently any mistakes are quickly checked and corrected on the job.



Shipments of Crude Rubber Coming in Through Los Angeles for the Firestone Plant

In contrast to the Goodrich plant, the Firestone factory uses the continued production scheme, but has modified it into a U shape so that the same warehouse serves for raw stocks or the finished products according to the fluctuating demands of the factory or shipping department. Elaborate conveyor systems in this plant have solved the two and three floor level problems in tire manufacturing. At present the operating organization has been built up to over 1,000 regular employees.

Goodyear Has Produced 13,000,000th Tire

At the Los Angeles Goodyear plant the 13,000,000th tire was just completed, and a record high production of 18,000 tires for one day was made one day in February of this year. By June 1st, 14,000,000 tires will have been manufactured at this factory since its opening in 1920, while by November 1st a total of 15,000,000 tires will mark the production record. However, the present daily average runs about 13,000 tires and 15,000 tubes. Most of the 16,000 tons of crude rubber which is consumed annually at this plant comes from the Goodyear plantations in Sumatra to the port of Los Angeles. All the cotton entering into the manufacture of Goodyear tires comes from the nearby fields in California and Arizona.

The Samson Tire Company has maintained a steady production since its beginning in 1919. A new factory unit is now under construction in order to afford greater development. Although the Samson tire company is really a native western factory, the other rubber manufacturers have come into this territory with additional benefits to western industries and markets. Related industries have been stimulated to better production methods to serve the exacting demands of the rubber factories. Such stimulation in the industrial field will focus international attention upon the development of the western Pacific area, of which the rubber factories are contributing a major stimulus.

C. Harold Smith—Carbon Black Pioneer

New Autobiography by head of Well-known Carbon Black Firm Discloses Incidents in Adventurous Career in Many Parts of the World

THE rise of a poor English boy from poverty and a despair, which once led to attempted suicide, to the head of one of the largest and most prosperous chemical manufacturing concerns now serving the rubber industry is the life story of C. Harold Smith, president of The Binney & Smith Company, New York, now published in entertaining autobiographical style by Mr. Smith under the title of "The Bridge of Life" and brought out through D. Appleton & Co., New York.

Only to intimate friends has Mr. Smith revealed the most trying incidents of his career until the publication of this book which has brought to light a life of vivid romance, so foreign to what one generally associates with successful captains of industry.

C. Harold Smith

He was born in London, England, in 1860, the youngest of eight and at the death of his father, was forced to shift for himself at the early age of fifteen. Like the case of many British younger sons he was shipped alone to New Zealand with the hope of early fortune but fate decreed otherwise. His own words tell the story with all the color of South Sea adventure.

"Soon after my arrival, I went to Hikitaia as a lumberjack in a bush camp of rough woodsmen employed in cutting down Kauri pines.

"Owing to lack of experience in following a blazed pathless trail in the semi-tropical jungle, I lost my way and escaped starvation only by encountering a native tribe.

"The native tribe that befriended me was preparing to attend a hakari, or feast, to be held in a clearing on the banks of the river Thames, a short distance from Hikitaia. It was a feast of reconciliation of all the Maori tribes in the Northern Island and was the largest and most momentous meeting of Maoris in the history of New Zealand. The feast was given by the Hau-Haus, or King natives, and invitations had been accepted by the different tribes who had fought with the British against the Hau-Haus. The tribe that succored me, fearing treachery, had secretly hidden rifles in their canoes. These were discovered by the Hau-Haus who threw them into the river. This act fanned the smoldering embers of the old Maori war spirit and precipitated a war dance. It did not seem possible that the shedding of blood could be prevented. Warfare was averted, however, by the diplomacy and tact of Sir Donald McClean, the British Native Minister.

"I was falsely accused of having acted the part of a spy by informing the Hau-Hau tribes of the hidden rifles. As a matter of fact, the secret was divulged by the bastard son of a chief. The chief had made love to a beautiful Maori girl who had repelled his advances and who had befriended me and given me her love. It was from her lips, when she was dying, that I learned of the treachery of this Maori chief, who had arranged to bring false witnesses to appear against me. This traitor to his tribe hoped by a master stroke to shift suspicion from his son and at the same time remove me as the lover of the girl. There was no safety for me but in flight.

"From Auckland I took a steerage passage on a boat to the Fiji Islands, and then sailed on to San Francisco, stopping at Honolulu."

Here he got a job in a wholesale fruit house but for the next year or more he wandered eastward to Ogden, Denver, Chicago, and New York, doing odd jobs and finally back to England, still scarcely seventeen years of age. But no place was found welcome to him at home and he again came to New York. His condition went from bad to worse until tired of sleeping on park benches and of feeling policemen's night sticks on the soles of his shoes, he sat one evening on the edge of a New York dock determined on taking "the cheapest route to heaven or hell."

He started quietly slipping down the pier, a scant five feet separating him from the water, when a woman's voice came through the night. "What are you doing?" it said.

The boy hesitated, irresolutely climbed back. "Some day I'll do it, too," said the woman. "Do what?" asked the boy. "Make a hole in the water," said the woman.

Neither of them did. The woman took the boy with her to her shabby lodging on the Bowery, fed him and put him to bed. In the morning she gave him half of her worldly wealth, $5, and he went out to look for a job, with the thought of the "water route" out of his mind.

Upon taking this new lease on life he secured a job wrapping packages in a lamp black concern. Shortly afterward he persuaded his employer to allow him to sell the product. This launched his successful career.

He soon turned, however, to selling awnings and horse-blankets in New York and on the road, to which products he also added the line of lamp blacks made by his former employer. He proved so successful in his selling that he was soon offered a partnership in the lamp black business. Following a trip to England to secure the American agency for red oxide and other colors, he decided to start in business for himself. Accordingly he took over the lamp black business of his partner and opened his first office at 17 Platt street, New York. He was forced to move and located on South street near Fulton and later on South near Catherine street where fire gutted out the building.

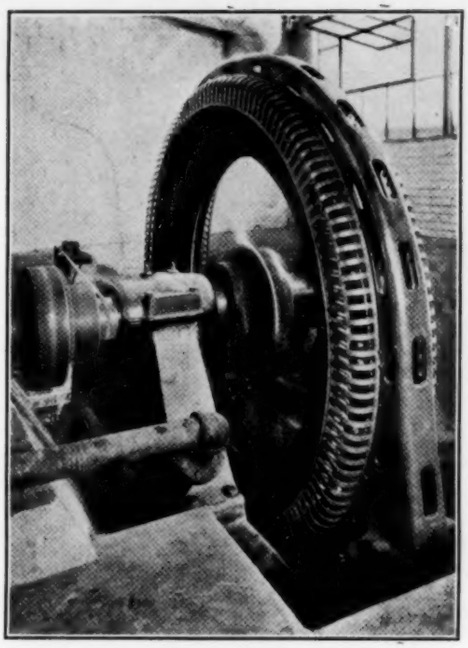
He soon was in operation again. In 1879 natural gas had first been used in the manufacture of carbon black in Ohio. Mr. Smith obtained the sales rights to the output of a large producer. Domestic sales increased rapidly and in a short time agents were appointed in foreign countries.

After the introduction of carbon black in Europe, a market was found in the Orient in the making of "India" ink and writing stick inks. Thousands of cases are now shipped annually to the Chinese market.

From this start, the carbon black business of the Binney & Smith Company has expanded into many fields until it is now doing an annual business of between $30,000,000 and $40,000,000—and the penniless boy of 1876 now has amassed a private fortune and stands at the head of one of the largest and most prominent concerns in the chemical industry.

Synchronous Motors *in the* Rubber Industry

Mechanical Speed Reducers Are Giving Place to Synchronous Motors With Direct Coupled Drive—Higher Efficiency Claimed



Installation at the India Tire & Rubber Co., Mogadore, Ohio, of a 300 h. p., 100 r. p. m, high torque E-M Synchronous Motor direct coupled to a line of 84" rubber mills

EARLY rubber mill drives were operated by reciprocating steam engines. Usually a low-speed line shaft, directly connected to the engine, provided the motive power for operating mills, crackers, and calenders. Aside from the great hazard to the workmen which was only partially offset by such safety devices as mechanical clutches, sliding pinions, and automatic engine stops, the cost of maintenance was high and no flexibility of production was afforded. As a result of the remarkable growth of power generating stations and power transmission systems providing electricity to the rubber manufacturer at low cost, the old mechanical drives have largely disappeared, and what few that are still in operation will never be renewed.

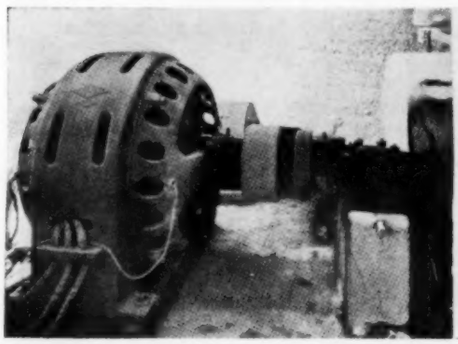
But even in the application of electric current to rubber mill drives, there has been a change in method and a distinct advance in procedure. At first high speed alternating current induction motors were used, speed reduction being accomplished by belt or chain drives, or gear reduction units. Induction motors below 600 r.p.m. suffer a great handicap in performance because of design limitations, making this reduction necessary. Mechanical speed reducers are often objected to by production engineers, not only on account of their initial expense of installation but also on account of the maintenance expense.

The answer to this problem has been found in many instances by the use of the synchronous motor with direct coupled drives. The inherent characteristics of synchronous motors make possible a most economical and satisfactory design in speeds ranging from 1800 r.p.m. down to 72 r.p.m. Operating efficiency is of prime importance, and the power loss in mechanical speed reducing mechanisms varies from 2% to 15% of the total power transmitted, some extreme cases being substantially higher.

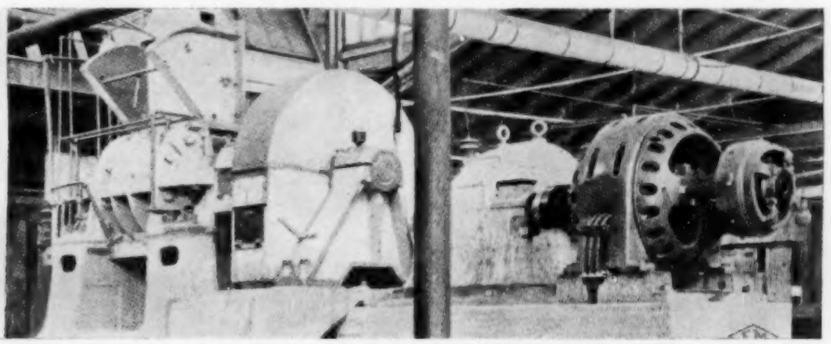
"Synchronous" means "in time" or "having the same period" and the action in a synchronous motor causes the rotor to revolve strictly "in time" with the generator supplying the alternate current power. The synchronous motor, when operated normally, is "excited" by a source of direct current, that is to say, a certain amount of direct current is passed through the rotor coils and thus produces the alternate north and south poles. All north poles of the rotor are attracted by the south poles of the rotating magnetic field of the stator, and all south poles of the rotor are likewise attracted by all north poles of the stator. Since the source of the magnetic fields of the rotor is direct current, supplied from an external source through slip rings, it is not necessary for the rotor to slip in order for the current to be generated in it. The magnetic fields of the rotor poles are "locked into step" with, and pulled around by, the revolving field of the stator, which action is responsible for the term synchronous motor.

The advantages of synchronous motors for use in rubber mill drives may be summarized as followed: (1) lowest maintenance expense; (2) uninterrupted production; (3) high operating efficiency or power factor; (4) minimum floor space requirements; (5) comparable first cost; (6) long life.

Power factor is just beginning to be seriously considered by rubber manufacturers as practically all contracts with power companies written today contain a power-factor clause which enables the manufacturer to reduce his power



Installation of a 150 h. p., 600 r. p. m. E-M unit in the plant of Trump Brothers Rubber Co, Akron, Ohio



Example of a small size mixer driven by a 150 h. p., 720 r. p. m., E-M Synchronous Motor installed in the plant of the Detroit Insulated Wire Co, Detroit, Mich.

bill by as much as five per cent. There are two currents flowing in the alternating current power wires to an induction motor. One is the magnetizing current (often called exciting current) which sets up the magnetic fields, and the other is the load current. In the case of the synchronous motor, magnetization is supplied by the direct current introduced through the slip rings to the rotor or field coils. Therein lies an important difference between synchronous and induction motors, and the advantages of synchronous motors are a direct result of their securing magnetizing current (exciting current) from a direct current source. The magnetizing current required for the operation of the induction motor must be in the form of alternating current, and supplied by the generators. The D. C. excitation of the generator must be increased to counteract the detrimental effect of the magnetizing on A. C. voltage. Therefore, in effect, the direct current required to supply the magnetization for synchronous motors must, if induction motors are used, be supplied to the field coils of the power system generators in order to transport the alternating magnetizing current through the transmission line, transformers and feeders to supply the required magnetic fields in the induction motors.

Power Factor in A. C. Circuits

The power factor of alternating current circuits is simply a geometric relation of the magnetizing current to the load current. The presence of any magnetizing current results in a lagging power factor, and the greater the amount of magnetizing current for a given load current the more lagging the power factor. Thus it is seen that the disadvantage of operating at low power factor is that the magnetizing current required for induction motors and other induction apparatus must be transported through the entire electrical system between the generators and the motors and further, additional direct current is required for the fields of the alternating current generators. It obviously means that larger generators, switches, transmission lines, transformers and feeders must be provided when the power factor is low, and that greater electrical losses are experienced.

Location of Motor Important

Power companies are not able to charge for the magnetizing current supplied, except by a penalty based on power factor, as it does not register on the meter that measures the power used. Now it is not necessary to replace all of the induction motors in a plant with synchronous motors to obtain high power factor. For any synchronous motor, a certain amount of direct current flowing through the field coils supplies the magnetization required for the full motor load and hence unity power factor operation results, as no alternating magnetizing current is required from the power supply. Thus if a synchronous motor so operated, is located near the induction motors, it will relieve the generator, transformers, transmission line, etc., of carrying magnetizing current.

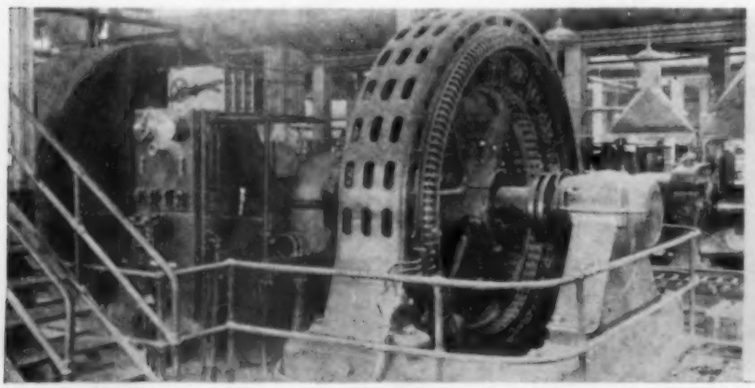
Characteristics of Driving Motors

It has long been recognized that a driving motor for a mill-line must have the following characteristics: (a) high starting torque to accelerate the load; (b) high operating torque to take care of peak loads; (c) quick stopping to meet safety requirements. Up to 1920, it was the standard practice to use high speed induction motors for driving rubber mill lines, through reduction gears and magnetic clutch brakes. The power factor problems introduced by this widespread use of induction motors, because of low average loads, caused them in many instances to be replaced by high speed synchronous motors operating through the same mechanical drive equipment. In some instances, slow speed synchronous motors were used, which eliminated the gear reduction units but retained the magnetic clutch and brake. The magnetic clutch was necessary because the motors were not designed with sufficient starting torque to start the mills, and further, the brake provided for quick safety stopping by disconnecting the motor from the mill, and bringing the latter quickly to rest when a safety switch was opened.

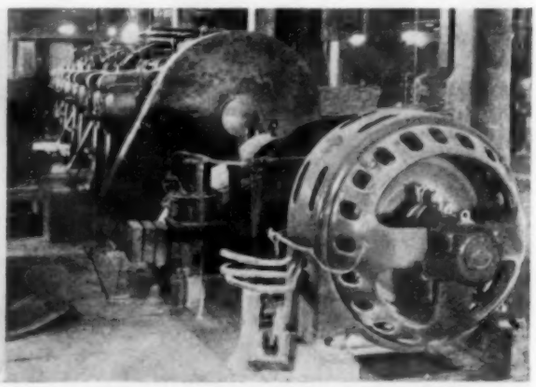
Since 1924, however, slow speed, direct connected synchronous motors with exceptionally high torque characteristics, have been applied to these rubber mill lines. While on the smaller horsepower motors the cost of a slow speed synchronous motor is much greater than that of a high speed, in the case of drives from 250 h.p. upwards the cost of a slow speed direct connected and a high speed with gear reduction unit installation is surprisingly close. It is claimed that the difference in cost is more than made up by savings in lubrication and maintenance on the reduction unit.

For the quick stopping of motors that are direct-connected to the mill-line shaft, it is essential to provide effective control equipment. This may be arranged either for dynamic braking or for plugging. The dynamic braking system disconnects the armature of the motor from the supply line and short circuits its terminals through a breaking resistance. The excitation of the direct-current field poles of the motor is maintained until the motor has come to rest.

The accompanying illustrations show many recent synchronous installations in American rubber factories, both of the high speed, gear-reduction nature, and the direct connected, which is the latest development. The data and illustrations have been largely supplied by The Electric Machinery Manufacturing Company, Minneapolis, Minn.



This direct coupled motor is an E-M 600 h. p., .8 P. F., 100 r. p. m., and is installed in one of the large Akron rubber plants. There is a duplicate installation in the Akron plant of the Goodyear Tire & Rubber Co.



One of two 200 h. p., unity power factor 600 r. p. m., E-M Synchronous Motors driving a line of refiners through reducing gears with magnetic clutch and brake. Akron Rubber Reclaiming Co., Barberton, O.

Surveying the British Rubber Industry

McKenna Tariff Proves Boon to Industry But Also Brings Foreign Companies Into Field—Production Fast Meeting Local Demands

By HARRY W. NEWMAN
Rubber Division, Department of Commerce

Principal Rubber Manufacturing Centers in United Kingdom. Squares Represent American Plants.

THE McKenna tariff of April, 1927, which imposed an import duty on certain rubber goods entering the United Kingdom, is chiefly responsible for increasing the self-sufficiency of the country, especially in rubber tires, and has thus resulted in a more favorable balance of trade. In 1925 the difference between the exports and imports of rubber products amounted to a value of £1,859,275, which decreased to £978,481 in 1926, caused by a heavy increase in tire imports, but 1927, the year of increased tariff, saw a favorable balance of £3,787,757. The figures for 1928 are only preliminary and are subject to revision, but the values at hand show a balance of £3,159,500, a decrease from the previous year.

The decline in the balance for 1928 is believed to have been caused by an 8 per cent decline in exports of automotive rubber goods and a 13 per cent decline in waste and reclaimed rubber, thus bringing about a total decrease in exports. On the other hand, total imports were increased materially by a 45 per cent increase in imports of rubber boots and shoes—an important item on the import list.

The above statistics do not include the large trade in water-proofed garments. Exports of this class in 1928 were valued at £1,238,166, whereas imports were valued at £114,004.

Rubber Industry Began in England

The rubber industry had its birth in the United Kingdom in 1824 and for a number of years thereafter that country was the acknowledged leading producer as well as exporter of rubber products. In recent years, however, the United States has increased its production and export trade, until at present the United States is the world's largest producer, the United Kingdom ranking second.

The name most prominent in the British rubber industry today is that of the Dunlop Rubber Company, Ltd., of Birmingham. It now controls many subsidiaries in Great Britain, one of which is the Chas. Mackintosk & Company, Ltd., a name which is connected with the earliest period of the rubber industry. Besides, the company has established subsidiaries in France, Germany, Australia, Canada, Japan, and the United States. It maintains its own plantations, consisting of about 66,000 acres in the Malay Peninsula and Ceylon of which 47,426 acres are planted. The factories manufacture tires, golf and tennis balls, and rubber products, which are sold through thirteen subsidiary sales companies.

The United States subsidiary plant was incorporated in 1919 and owns a modern tire manufacturing plant located on 215 acres of land at Buffalo, N. Y. The production capacity is 12,500 automobile tires per day, 500 truck tires, and 15,000 tubes.

The Dunlop company in 1888 was the original proprietor of the first practical pneumatic tire.

The North British Rubber Company, Ltd., of Edinburgh, produces all kinds of tires, sport goods, hard-rubber goods, footwear, and specialties, and exports considerable quantities to foreign markets. George Spencer Moulton & Company, Ltd., and Wood-Milne, Ltd., of London, which is controlled by the Federated Rubber Growers and Manufacturers, owns rubber estates in British Malaya and is interested in the South African Rubber Manufacturing Company of Natal The companies produce tires, rubber soles and heels, golf balls, and rubber floorings.

In May, 1924, a selling organization of an American concern and the Ajax Rubber Works, owned by Wood-Milne Tire & Rubber Company, merged and a new company known as the British Goodrich Rubber Company, Ltd., was formed. It manufactures, besides tires and tubes, mechanical rubber goods, hard-rubber goods, footwear, and sundries and specialties, and exports its surplus products to other fields.

McKenna Tariff Brings in Foreign Plants

When the McKenna tariff became effective, foreign concerns, in order that the British market may not be lost to their interest, immediately began the establishment of subsidiary plants. Chief among them are three well-known American corporations, as well as the Michelin company of France. Pirelli of Italy, which already had a plant at Southampton, ultimately commenced the erection of a larger plant at Burton-on-Trent for the production of tires and tubes.

Many other concerns of strictly British capital have long been connected with the rubber industry of Great Britain, among which may be mentioned Avon, Palmer, Stepney, Mosely, and Rapson.

The domestic manufacturers of automobile casings during 1928 did not recover entirely from the responsibilities placed upon them by the McKenna tariff of 1927, and therefore exports were not able to reach the heights formerly attained. Improvement, however, was noticed, for exports during the last six months of 1928 showed a 44 per cent increase over those of the first six months. Another indication of increased activity in the tire manufacturing trade is to be found in the fact that imports of pneumatic tires de-

clined from a value of £1,025,667 in 1927 to £737,189 in 1928.

Value of United Kingdom trade in rubber products

Item	1925	1926	1927	1928
EXPORTS				
Automotive rubber goods	£4,079,244	£4,524,162	£3,742,187	£3,426,780
Footwear	570,368	496,231	496,031	[1]456,255
Mechanical rubber goods	814,438	830,722	781,149	[2]616,610
Waste and reclaimed	258,696	286,020	277,614	241,838
Miscellaneous	2,764,471	2,687,498	2,569,011	[3]2,988,713
Total	8,487,217	8,824,633	7,865,992	7,730,196
IMPORTS				
Automotive rubber goods	3,867,632	4,849,474	1,251,005	972,347
Footwear	862,623	1,223,046	1,030,320	[1]1,626,123
Mechanical rubber goods	232,102	245,298	241,938	[2]140,204
Waste and reclaimed	110,845	99,999	114,131	108,760
Miscellaneous	1,554,740	1,428,335	1,440,841	[3]1,723,245
Total	6,627,942	7,846,152	4,078,235	4,570,679

[1]Does not include rubber soles and heels.
[2]Does not include rubber hose.
[3]Includes hose, soles, and heels.

Now that the local industry is able to satisfy the domestic consumption, it is reasonable to expect that American tire manufacturers will experience keener competition on the part of British producers during 1929 than at any time heretofore. Dunlop, the principal exporter of tires, was forced to curtail its activities in many foreign markets during 1927 and 1928, and devote most of its time in supplying the home needs. Dunlop is now able to concentrate its energy upon developing or reclaiming markets temporarily lost during that period. Already foreign distributors are reporting increased activity among the Dunlop agencies in foreign fields, supplemented by visiting representatives from the British factory.

The construction of this large group of mills was commenced during the war, their completion some years later enabling most of the processes in the manufacture of Dunlop tires to be centered in one spot instead of in a number of smaller works. The cotton fabric consumed in the Dunlop works is fabricated at Rochdale.

Dunlop controls shares in Dunlop Rubber Cotton Mills, Ltd., and the entire capital stock of Dunlop Rim & Wheel Company, W. Goodyear & Sons, Ltd., and Improved Steel Company. Dunlop also owns the controlling interest in Chas. Macintosh & Company, Broadhurst & Company, Campbell, Achnach & Co., Casoid., Manchester Balta Belting Company, Macintosh Cable Company, New Eccles Rubber Works, and Liverpool Rubber Company.

Foreign Factories Enter Field

Another factor which American tire exporters have not encountered in the past, except in one instance, is the competition of foreign subsidiary factories within the Kingdom. Besides British Goodrich, which has been producing since 1924, the British plant of the Goodyear Rubber Company at Wolverhampton began production early in the Summer of 1927 and is now exporting tires to adjacent markets. The British India Tire & Rubber Company, of Inchinnan, Scotland, is now producing with an ultimate goal of 2,000 tires per day. The Firestone plant at Brentford was completed in the latter part of 1928 and has a productive capacity amounting to 2,000 tires daily. It is only a short time when these companies will find it more profitable to supply the nearby consuming markets of Europe and North Africa with tires from the British plants and thus avoid the long hauls and added transportation costs from the United States.

Production of the Michelin works at Stoke-on-Trent began in November, 1927, and since that time production has increased until December 31, 1928, the output was reputed to be 2,000 tires per day. It was the Michelin company which was responsible for the reduction in tire prices during September, 1928, which forced Dunlop, British Goodyear, and other tire manufacturers to follow with similar reductions. It is anticipated that production at the Pirelli plant at Burton-on-Trent will commence sometime during 1929.

The solid tire trade continues to decline, the rate having been accelerated by the growth of the giant pneumatic in favor of large transport undertakings.

British markets are still the important outlets for British-made tires, 53 per cent of the total in 1925, 60 per cent in 1926, 55 per cent in 1927, but only 49 per cent in 1928.

Rubber footwear was not included in the McKenna tariff, and therefore is still admitted upon the free list. Imports into the United Kingdom have increased at a more rapid pace than exports, with the consequence that with one exception an increasing unfavorable balance is recorded each year.

Footwear Trade Highly Competitive

The market in rubber footwear is highly competitive. In addition to the domestic industry, which is well established and which has a fairly extensive export trade, there are several American manufacturers who have been successful in establishing their products in a prominent position on the market. In 1927, the latest available detailed figures, Canada supplied 177,926 dozen pairs, the United States 108,819 dozen pairs, France 103,511, and Germany 45,214.

For canvas rubber-soled shoes there is an active seasonal demand. Those which are consumed are principally of Canadian make, although a fair amount is of British origin. Within the past two years Belgium has been exporting rubber-soled shoes in steadily increasing quantities at very low prices.

The United Kingdom manufactures a large variety of druggists' rubber sundries and specialties, and maintains an increasing export trade. A large portion of the domestic consumption, however, is supplied by imports. The United States finds the Kingdom its best market for products of this class, the former exporting a value of $1,147,268 in 1928. The United Kingdom is also Germany's principal outlet for such products.

The United Kingdom still maintains the lead in the production and exportation of golf balls. Exports in 1927 amounted to 434,198 dozen, valued at £384,819.

Tire Fabric Census

THE Department of Commerce has announced that according to data collected at the biennial census of manufactures taken in 1928, the establishments engaged primarily in the manufacture of cord fabrics for tires in 1927 reported products valued at $66,974,970 and totaling 179,740,778 square yards.

Tire Fabrics, by Kind, Quality and Value Produced 1925 and 1927

	1927	1925
Cord fabric for tires—		
Pounds	160,612,114	140,492,454
Square yards	179,740,778	176,964,466
Value	$66,974,970	$80,478,625
Tire duck—		
Pounds	30,164,943	32,081,733
Square yards	35,474,346	40,761,508
Value	$11,343,197	$16,628,610
Tire fabrics other than cord or duck—		
Pounds	6,576,001	16,771,008
Square yards	10,716,518	24,400,485
Value	$2,656,032	$8,518,659

RUBBER CHEMISTRY and Technology

Effect of Antioxidants in Typical Rubber Stocks[1]

By MARION C. REED

The B. F. Goodrich Company, Akron, Ohio

A NUMBER of valuable papers have appeared from time to time concerning the use of antioxidants in rubber goods. In most of these papers tensile strength and elongation before and after varying periods of aging in the Geer oven[2] or the Bierer-Davis bomb[3] have been the criterion of merit of different antioxidants. Recognizing the value of these tests, the writer wishes to point out certain additional evidence of the usefulness of antioxidants in the rubber industry as shown by other tests as well as by tensile strength and elongation.

While antioxidants are of value in a great variety of rubber goods, only a few typical examples are given as illustrating the effects of antioxidants in factory production stocks—namely, tire treads, inner tubes, dry-heat-cured goods, specification stocks, and sponge rubber. In these examples Age-Rite resin was the antioxidant used, since this was the first non-accelerating antioxidant available for use in this plant. After nearly five years of production use, a sufficient background of experience has been obtained to judge the value of this antioxidant in practice. Where available, natural aging results are presented along with artificial aging results.

Tire Treads

The effects of 1 per cent of antioxidant on the recipe in a blooming tread stock are shown in Table I. The stocks used in these tests were mixed and cured in the laboratory, making press sheets 15 x 20 x 0.25 cm. (6 x 8 x 3/32-inch). The cure was controlled to approximate the actual heat treatment that a tread using the same compound received in the factory. Strips of these stocks were aged in the Geer oven, in sunlight, and in dark boxes in a storeroom. In the sunlight one set of strips was exposed without tension at 45 degrees from the horizontal, facing south, during June to September, 1924. Another set of strips was flexed while exposed to sunlight. After three weeks' flexing in sunlight the stock containing antioxidant showed slight surface cracks, while the stock without antioxidant was cracked much worse.

Sections of two 30 x 3½-inch tires were obtained. One using the above tread compound without antioxidant was cured in November, 1923. The other section was cured in February, 1924, and carried a tread compound the same except for the substitution of 0.44 part antioxidant for an equal weight of rubber in 100 parts of stock. Other conditions of manufacture and storage were identical. After nearly three years of storage in a fairly dark sample room, the stock without antioxidant was weak as shown by "bite" and hand tests. The stock containing antioxidant was markedly stronger. After nearly five years of storage the difference between the two stocks was even greater.

Antioxidants have shown a similar effect in maintaining resistance to tear when aged in the Geer oven and in the Bierer bomb, or in storage in the dark. Abrasion tests after varying periods in the Geer oven have shown the lasting properties of tread stock to be better when containing antioxidant.

TABLE I—EFFECT OF ANTIOXIDANTS ON TIRE TREAD STOCK

Rubber 53, zinc oxide 15, gas black 20, and sulfur 3 per cent
Accelerator—hexamethylenetetramine

TREATMENT	NO ANTIOXIDANT			1% ANTIOXIDANT		
	Tensile strength		Elongation at break	Tensile strength		Elongation at break
	Kg./ sq. cm.	*Lbs./ sq. in.*	*%*	*Kg./ sq. cm.*	*Lbs./ sq. in.*	*%*
Original	250	3550	690	254	3610	700
Geer oven 7 days	87	1240	440	167	2380	560
Geer oven 14 days	49	700	240	87	1240	430
Sunlight 6 weeks	208	2960	600	232	3300	670
Sunlight 10 weeks	177	2520	570	221	3150	610
Sunlight 14 weeks	159	2260	530	216	3070	560
In dark 2 years, 5 months	184	2620	520	219	3120	570

Inner Tubes

In high-gum inner tubes tensile strength is probably not so important as resistance to tear. Inner tubes 29 x 4.40 inches were made up in the factory from two stocks identical except that in one case 0.75 part of antioxidant was substituted for an equal part of rubber in 100 parts of the compound, while the other stock contained no antioxidant. One tube of each compound was run approximately 2000 miles on the dynamometer and tested. Tear was determined on crescent-shaped strips having nicks cut on the concave side. Jaws were fastened to the ends of the crescent and were separated at the rate of 50.8 cm. (20 inches) per minute. The figures represent pounds per 0.1 inch thickness and are averages of transverse and longitudinal tear. The results of these tests are shown in Table II. It is noteworthy that resistance to tear after running on the dynamometer decreased when antioxidant was not used.

Stocks Cured in Dry Air

Much footwear and a number of specialty stocks are cured in dry air. It is often a very difficult problem to get stocks to cure properly in dry heat without becoming tacky and at the same time not to cure so quickly as to scorch in handling. This surface tack in dry-heat cures is due to oxidation, since it does not occur in steam cures or cures in dry carbon dioxide. Surface tack is greatly diminished or eliminated by the proper use of antioxidants, especially

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TABLE II—BLOOMING INNER TUBE (80 PER CENT RUBBER)

TREATMENT	No Antioxidant				0.75% Antioxidant			
	Tensile strength		Elongation at break	Tear	Tensile strength		Elongation at break	Tear
	Kg./ sq. cm.	*Lbs./ sq. in.*	%		*Kg./ sq. cm.*	*Lbs./ sq. in.*	%	
Original-new tube	147	2090	730	19.2	161	2290	750	18.5
Original-used tube	153	2180*a*	715*a*	13.4*a*	170	2420*b*	695*b*	18.6*b*
Geer oven 4 days*	129	1840	665	6.8	165	2350	700	16.1
Geer oven 7 days.	119	1690	600	5.7	167	2370	700	9.1
Geer oven 10 days	95	1360	565	5.0	185	2630	620	7.8
Geer oven 14 days	53	750	465	3.7	165	2350	605	7.4
2 days oxygen bomb, 70° C., 300 lbs. per sq. in. (21 kg. per sq. cm.)	43	610	475	...	172	2440	695	...
4 days oxygen bomb, 70° C., 300 lbs. per sq. in.	..	...	...	...	92	1300	600	...

a Tube run 2113 miles on dynamometer.
b Tube run 1857 miles on dynamometer.
*All oven and bomb tests are on tubes run on dynamometer.

AgeRite resin. Many stocks now in use could not be handled without antioxidant. Antioxidants also greatly improve resistance to cracking when flexed in sunlight.

Specification Stocks

In many rubber goods artificial aging specifications are imposed. In these cases antioxidants have proved to be of considerable value, often permitting the use of cheaper compounds. The amount of antioxidant to be used in these cases must be determined by the nature of the specifications. In certain cases a minimum acetone extract is specified which will not permit the use of more than a very small amount of antioxidant. A steam hose cover was considerably improved, as indicated by the rack test, by the addition of 0.5 per cent antioxidant on the recipe.

Sponge Rubber

A very spectacular example of the value of antioxidants was in black sponge rubber. Samples were taken from factory production, both before and after substitution into the recipe of 0.5 per cent of antioxidant for an equal amount of rubber. These samples were aged in the Bierer bomb at 70° C. and 300 pounds per square inch (21 kg. per sq. cm.) oxygen pressure for two days. Without antioxidant the sponge became so brittle in some places it could not be bent without cracking, while the sample with antioxidant was quite live and flexible. Similar results were obtained with a poorer grade of sponge rubber made in the laboratory and stored in the dark without artificial aging tests.

Effect of High Temperatures

In order to get some measure of the value of antioxidants in stocks subjected in service to high temperatures in the presence of air, a 90° C. air oven test was investigated. Since a short heating at a very high temperature is known to depolymerize or otherwise adversely affect rubber, it was thought that perhaps long heating at 90° C. might produce the same effect. A day in air at 90° C. was found to cause nearly as much deterioration of rubber as a week in air at 70° C. Aging at 90° C. in an oven through which commercial nitrogen was passed gave in several trials almost the same results as aging in air at the same temperature. If, however, the strips were sealed in vacuum or in a small container in purified nitrogen, very little deterioration took place. While long heating at 90° C. in the absence of oxygen produces overcure in some stocks, heating in the presence of air or an inert gas containing a very small concentration of oxygen causes vastly more deterioration.

In the stocks tested, and probably in all well-balanced stocks that are not highly accelerated, the effect of temperatures up to 90° C. in the absence of oxygen is insignificant as compared with the effect of oxygen at these temperatures. Similar results have been reported by Jones,[4] who found that three typical rubber stocks showed almost no change in tensile and elongation in two weeks at 70° C. in a vacuum but were markedly deteriorated after the same period in air at 70° C.

TABLE III—EFFECT OF HEAT AND OF OXYGEN ON TIRE TREAD STOCK

Rubber 53, zinc oxide 15, gas black 20, and sulfur 3 per cent
Cured 45 minutes at 146° C. in press
Accelerator—hexamethylenetetramine

TREATMENT	No Antioxidant			0.5% Antioxidant on Recipe		
	Tensile strength		Elongation at break	Tensile strength		Elongation at break
	Kg./ sq. cm.	*Lbs./ sq. in.*	%	*Kg./ sq. cm.*	*Lbs./ sq. in.*	%
Original	269	3830	633	262	3730	633
7 days in vacuum at 90° C.	238	3380	530	241	3430	565
2 days in commercial nitrogen at 90° C..	77	1100	353	102	1450	423
2 days in air at 90° C.	71	1010	300	99	1410	400
7 days in Geer oven at 70° C.	133	1890	473	190	2700	562

TABLE IV—EFFECT OF HEAT AND OF OXYGEN ON HIGH ZINC OXIDE TUBE STOCK

Rubber 48, zinc oxide 45, and sulfur 2 per cent
Accelerator—hexamethylenetetramine

TREATMENT	No Antioxidant			1.5% Antioxidant		
	Tensile strength		Elongation at break	Tensile strength		Elongation at break
	Kg./ sq. cm.	*Lbs./ sq. in.*	%	*Kg./ sq. cm.*	*Lbs./ sq. in.*	%
Original	197	2800	620	198	2810	603
7 days pure nitrogen at 90° C.	190	2700	593	198	2810	600
2 days in air at 90° C.	168	2390	653	215	3060	660
3 days in air at 90° C.	138	1960	627	193	2750	637
4 days in air at 90° C.	98	1390	580	165	2340	633

The effect of air at 70° C. and of air, commercial nitrogen, the vacuum at 90° C. on a tread stock with and without antioxidant is shown in Table III. Deterioration in two days in commercial nitrogen or air at 90° C. was very great. Seven days at 90° C. in vacuum caused only a slight overcure.

The effects of purified nitrogen in a sealed flask and of air at 90° C. in a high zinc oxide tube stock, both without and with 1.5 per cent antioxidant on the recipe, are shown in Table IV. Results of similar tests with a low zinc oxide tube stock are shown in Table V, in which 2.5 per cent antioxidant on the recipe was used.

TABLE V—EFFECT OF HEAT AND OF OXYGEN ON LOW ZINC OXIDE TUBE STOCK

Rubber 82, zinc oxide 15, sulfur 2.3, and di-*o*-tolylguanidine 0.5 per cent

TREATMENT	No Antioxidant			2.5% Antioxidant		
	Tensile strength		Elongation at break	Tensile strength		Elongation at break
	Kg./ sq. cm.	*Lbs./ sq. in.*	%	*Kg./ sq. cm.*	*Lbs./ sq. in.*	%
Original	225	3200	730	226	3220	760
7 days pure nitrogen at 90° C.	209	2970	625	219	3120	613
2 days in air at 90° C.	179	2550	773	230	3270	735
3 days in air at 90° C.	134	1900	710	212	3010	730
4 days in air at 90° C.	72	1030	663	197	2800	740

Conclusion

The results of these tests show that antioxidants are of value in stocks which become hot in service, such as bus

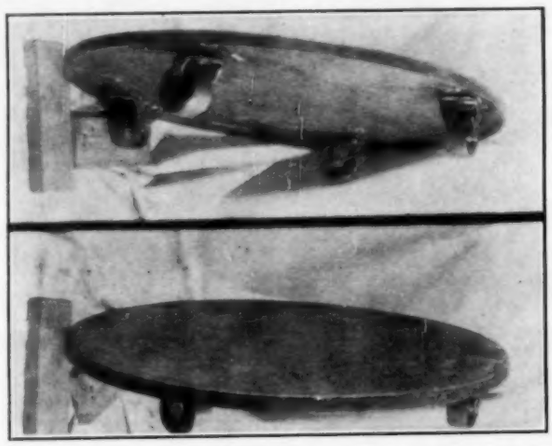
tubes, belt frictions, and heavy truck tire treads. It is believed that aging at 90° C., both in air and in an inert gas free from oxygen, will be of assistance in separating the factors of oxidation and overcure in designing rubber compounds for resistance to heat.

The writer wishes to express his appreciation to friends for the use of data, and particularly to H. A. Winkelmann for results on sunlight and Geer oven aging in tread stocks.

[1]Presented before the Division of Rubber Chemistry at the 76th Meeting of the American Chemical Society, Swampscott, Mass., September 10 to 14, 1928.
[2]Geer and Evans, *Rubber Age (London)*, **2**, 308 (1921).
[3]Bierer and Davis, *Ind. Eng. Chem.*, **16**, 711 (1924).
[4]Jones, *Ind. Eng. Chem.*, **17**, 871 (1925).

Tire and Tube Pans

A NEW product has recently been developed for the rubber industry by the Commercial Shearing and Stamping Company, Youngstown, Ohio, as shown in the accompanying illustration. It consists of a flat pan



Bottom and Top View of Pans

made of 12 gauge material with a 1″ flange on it supported by four castings. They are said to have found favor in one or two rubber plants for carrying tires and tubes after being removed from the molds.

Tire Output 25 Per Cent Over 1928

PRODUCTION of pneumatic casings of all types in the United States during January marked a record total for that month of 6,722,040, a gain of approximately 25 per cent over the January, 1928, figure of 5,357,689 casings. The gain was especially noticeable in balloon casings, of which 4,627,461 were manufactured as against 3,169,732 in January, 1928. A considerable increase over production figures for December was also shown, but the output of casings was only slightly above shipments which totaled 6,626,196 for all types and 4,665,495 for balloon casings alone.

The figures for January, as released by the Rubber Association of America, Inc., represent 75 per cent of the total industry in the United States and have been brought up to represent 100 per cent. in the following table:

TIRE AND TUBE PRODUCTION
(All Figures Represent Thousands)

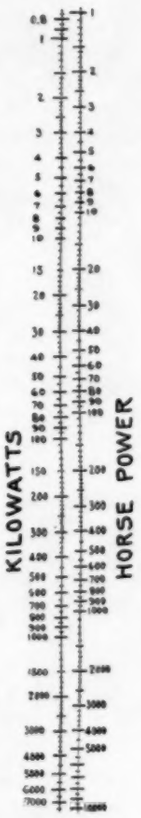
	December, 1928			January, 1929		
Pneumatic Casings:	Prod.	Ship.	Inven.	Prod.	Ship.	Inven.
All types	5,605	4,591	13,624	6,722	6,626	13,712
Balloon	3,681	3,162	8,793	4,627	4,665	8,779
High Pressure Cord	1,913	1,415	4,774	2,085	1,948	4,868
High Pressure Fabric	11	14	56	10	13	65
Solid and Cushion Tires	42	41	203	43	45	201
Inner Tubes:						
All types	5,184	4,858	16,117	6,517	7,242	15,386
Balloon	3,272	3,093	9,400	4,464	4,841	9,073
High Pressure	1,912	1,775	6,717	2,054	2,401	6,313

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Kilowatt Horsepower Scale

HERE is a scale that will be of interest to rubber plant engineers because it gives the kilowatts in any number of horsepower in a jiffy. Or, it will give the horsepower in any number of kilowatts. As will be noted it is complete from 1 to 10,000 horsepower, within which range most powers are included.



Kilowatt H. P. Scale

For example, how many horsepower in 1,000 kilowatts? Just glance from the 1,000 on the kilowatt side to the horsepower side, and there's the answer—1350 horsepower.

Or, how many kilowatts in 1,000 horsepower? Glance across in the opposite direction and there's the answer again—750 kilowatts.

Of course, the exact answer is 745.65 kilowatts, but for most ordinary and practical purposes 750 will do very well indeed, thank you.

I doubt if it would be possible to make a chart more compact than this and yet include such a wide range of power. A chart could be made more accurate, no doubt, but that would require much painstaking work and in the end this chart would very likely prove to be just as useful for ordinary work such as generally demanded.

To Make a Hole Through Glass

INASMUCH as very few mechanics know how to bore a hole through glass and we sometimes have that job to do I will give the following method which I trust will be found useful:

Use a hollow brass tube of the size of the hole desired. Or, turn down a brass rod making it hollow and tube-like in shape, of the desired diameter.

File small teeth in the end, making them look like saw teeth. These are necessary for holding the abrasive material. Of course, copper teeth cannot cut glass, as copper is much softer.

Place the tube in a vertical drill press and carefully rest the glass on a soft pad of paper, leather, or felt, etc.

Do not attempt to do the work quickly. Be very gentle and painstaking about it. It takes about a half hour to drill through a pane of glass one-eighth inch thick.

Use three parts of turpentine and one part of ether as a lubricant. If no ether is available, turpentine may be used alone but the combination of the two is much better.

Run the drill at a speed of 15 to 30 r.p.m.—very slowly and without much pressure. Be very patient. Do not hurry. Your patience will be rewarded.

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EDITORIAL COMMENT

Oil vs. Rubber Restriction

IRRESPECTIVE of the merits of the recent proposal of the Petroleum Institute for the restriction in oil output during the ensuing year, President Hoover, by his refusal to sanction the plan, has probably escaped from a position which would have given our British cousins an infinite amount of enjoyment and would have led to no end of criticism. What could have been better 'meat' for the British press than the news that President Hoover, the arch opponent of the Stevenson rubber restriction policy, had succumbed to the oil barons and agreed to lend official support to the restriction of petroleum. One can imagine indignant debates in Parliament, Cabinet interrogations on the floor of the House of Commons, diplomatic exchanges of notes and all manner of lambasting comment from the British rubber growing interests.

All this has been avoided by the consistent and courageous attitude of the President. Restriction in commodity production with governmental sanction is anathema to him. Six years of fight against rubber restriction cannot easily be forgotten. A reversal of position on this principle would shriek of inconsistency and that characteristic or failing cannot be ascribed to the President.

There are many phases of the oil plan which would not make the case analogous to the Stevenson policy, particularly the fact that the agreement on oil is international in scope and would affect British interests as well as American, but that is a point beside the issue. A principle is involved. It is all very well to designate restriction plans as 'remedies.' The purpose of restriction in any form is always for a betterment in price, an attempt to interfere with the law of supply and demand and cut competition so that the consumer can be made to pay through the nose at the whim of the producer. The American public and the American rubber industry has had a dose of this kind of 'remedy' and has found it to be a fake 'patent medicine'.

Overalls vs. White Collar Jobs

THE need of a revival of apprentice training in industry was stressed by Magnus W. Alexander, president of the National Industrial Conference Board, New York, at a recent dinner of the Special Conference on Industrial, Technical and Business Education held in New York early this month.

Declaring that the demand for skilled labor in industry exceeds the supply and that, because of the increasing mechanization of industry, the need for skilled mechanics was likely to become more acute. Mr. Alexander emphasized the social implications of the apparent lack of appreciation of industrial work as a vocation among modern youth. In no sense is it suggested that apprentice training take on the methods of the British industries or the old system of hiring out on several years contract for room and board and a miserable allowance.

Mr. Alexander spoke in part as follows: "Indeed, the problem today is not so much of methods of training apprentices, which are being developed now to a high degree by far-seeing industrial managers and educators, but rather of obtaining apprentices willing to undergo the requisite period of training. In the last analysis, the chief phase of the apprenticeship problem in the United States today is that of creating, stimulating and cultivation in our youth an interest in industry as a vocation and the will to work. In no other country does there prevail such ambition among youth to go to college or such a hankering for white collar jobs.

"During recent years, college attendance has increased at a rate approximately five times faster than the population. As a result, we have lawyers so hard put to it that they have to chase ambulances for clients; ministers without churches; doctors without patients selling life insurance, and teachers out of jobs selling books; while your skilled worker in industry has generally no difficulty in maintaining his own home, a car, and in providing his family not only with the necessities but also with many of the comforts and some of the luxuries of life."

"The schools can do much to create an increasing interest in and respect and even admiration for an industrial vocation and greater appreciation of the importance of the potential earning power and opportunities of promotion for the skilled worker in industry."

While the skilled labor problem in the rubber manufacturing industry is not acute, Mr. Alexander's remarks may easily be as applicable as regards the opportunities there as in any other of the nation's industries.

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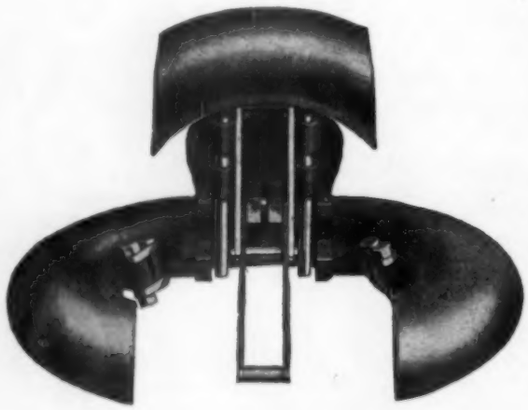

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SHORT NEWS & DEPARTMENTS

Names in the News
Rubber Goods & Specialties
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Crude Rubber Items

GARLOCK PACKING SOLD TO BANKING INTERESTS

The business and assets of the Garlock Packing Company, Palmyra, N. Y., have been purchased by a new group of banking interests, including the firms of White, Weld & Company, Sage, Walcott & Steele, and the Marine Union Investors. The latter firm is a new security company formed by the Marine Trust Co., Buffalo, N. Y., and associates. The bankers will be represented on the company's board of directors.

The Garlock Packing Company is said to be the largest American manufacturer of rubber and other mechanical packings. These products are sold through 27 branch offices to 60,000 customers in all parts of the world.

The present management will continue to direct the company's operations under the new ownership. The principal plants at Palmyra occupy 48 acres.

REPUBLIC COMPANY TO PRODUCE RUBBER RUGS

The Republic Rubber Company, Youngstown, O., a subsidiary of the Lee Rubber & Tire Company, is starting work on the production of rubber rugs at the rate of 3,000 a month. Two types will be made, one of the rag rug variety for homes and offices, and the other of the non-skid type for airplane cabins.

These rugs will be made in various sizes, with the maximum being 6 by 15 feet. The rugs are to be turned out in a number of designs and will be washable and soundproof. The Republic company now employs 800 workmen and plans to expand this force to 1,000 in the near future.

MURRAY RUBBER COMPANY PLANNING RETAIL CHAIN

The Murray Rubber Company, Trenton, N. J., announces that steps are being taken for the establishment of a chain of stores for the retail distribution of tires. The entire output of the Murray factories will be distributed through this chain, which will extend principally through the large cities and county seats of the southern states. Established stores will be taken over and new ones opened up to make up the chain, which is being organized to meet the competition of mail order houses and other chain distributors.

C. Edward Murray, Jr., president of the company, has also announced that Caldwell & Company, Nashville, Tenn., the National Bank of Kentucky, Louisville, Ky., and the Third National Bank of Scranton, Pa., have acquired an interest in the Murray organization.

N. T. D. A. ASSISTS IN TIRE STOCK SURVEY

The National Tire Dealers' Association has been actively co-operating with the Rubber Division of the Department of Commerce in making the semi-annual survey of dealers' stock as complete as possible. A special bulletin has been sent out to all members and prospective members of the association by C. A. Meyer, managing director, urging all to work with the government in the matter of the questionnaires.

The bulletin calls the attention of the dealer to the fact that he may receive the information developed through this survey by specifying on the questionnaire form his interest in obtaining the report. It is expected that this feature may be instrumental in raising the number of replies to the Department of Commerce.

Dayton Plans $100,000 Mill

The Dayton Rubber Manufacturing Company, Dayton, O., is completing plans for an addition to its mill to be one story in height and 180 by 300 feet in size. The cost of the new structure will be in excess of $100,000, including machinery. After the addition is completed, a large increase in the present tire and tube capacity of the Dayton factory will be arranged.

NEW GEORGIA COTTON MILL IS PLANNED BY GOODYEAR

A new cotton mill with a capacity of 50,000 spindles will be erected in Georgia by the Goodyear Tire & Rubber Company at a cost of $3,500,000. The site of the plant will be in one of four cities in that state selected after a recent survey, these being Newman, Rockmart, Cartersville and Dalton.

F. W. Wall of Akron, O., general counsel for the Goodyear organization, is now in Georgia investigating titles to land offered as sites for the proposed mill. The company is also adding 20,000 spindles to its plant at Cedartown, Ga., and the new factory will bring its Georgia properties to a total capacity of 100,000 spindles by October 1. The entire output will be used for cord and fabric tires, and a large proportion of the output will be consumed by the new Goodyear tire factory at Gadsden, Ala.

GOODYEAR OFFICERS ARE RE-ELECTED AT MEETING

All officers of the Goodyear Tire & Rubber Company were re-elected at a meeting of the board of directors that followed the assembling of the company stockholders in Akron on March 25. The stockholders' meeting, presided over by President Paul W. Litchfield, was devoted largely to routine reading of the company's financial report for the past year.

The directors who held a session immediately afterward returned to office for a one-year term four vice-presidents, the treasurer and secretary. They are: C. F. Stone, C. C. Slusser, C. A. Stillman and R. S. Wilson, vice-presidents; P. E. H. Leroy, treasurer; and W. D. Shilts, secretary. President Litchfield, holding office for a three-year term to which he was elected two years ago, did not figure in the present balloting.

R. B. KOONTZ CHOSEN HEAD OF ADAMSON MACHINE CO.

At a special meeting of the board of directors of the Adamson Machine Company, Akron, O., manufacturers of rubber machinery, R. B. Koontz, formerly secretary and treasurer, was elected to the position of president and general manager to succeed the late Alexander Adamson. C. L. Fenn, formerly assistant treasurer, was selected to act as secretary and treasurer, and L. S. Dudley was elected assistant secretary and assistant treasurer. W. E. Slabaugh was chosen as a director to fill the vacancy caused by the death of Mr. Adamson on March 3.

Funeral services for Mr. Adamson were held on March 6 at the High Street Church of Christ in Akron, of which he had been a member for 35 years. It was in 1893 that Mr. Adamson founded the business that bears his name, and he was actively and intimately associated with the company until his death.

Mr. Koontz has acted as secretary and treasurer of the Adamson Machine Company since its incorporation in 1909, and Mr. Fenn has been connected with the organization for a period of 17 years.

Hard Rubber Men Meet

At a meeting of the Hard Rubber Manufacturers Division of the Rubber Association of America held at the Yale Club, New York City, on March 20, S. T. Campbell, of the Aetna Rubber Company, was elected chairman of the division for 1929.

JOHN S. BROUGHTON, former prominent Trenton, N. J., rubber manufacturer, is recovering from a recent operation at the Princeton Hospital. Mr. Broughton was previously head of the United & Globe Rubber Company and other rubber concerns.

SCRAP RUBBER DEALERS HOLD CHICAGO MEETING

During the course of the 16th annual convention of the National Association of Waste Material Dealers at the Congress Hotel, Chicago, Ill., the Scrap Rubber Division of that organization held a well-attended meeting on the afternoon of March 19. David Feinburg of the David Feinburg Company, Boston, Mass., was re-elected chairman of the division.

A discussion of moisture deductions on tires and of the general conditions existing in the industry featured the session. The committee appointed to confer with a committee from the rubber reclaimers reported progress in its negotiations.

The most important act of the business sessions of the N. A. W. M. D. was the determined stand taken against the practice of certain unscrupulous dealers who, under certain market conditions, deliberately violate contracts made. This practice, which takes the form of selling materials once sold, if by doing so a higher price can be obtained, has been particularly noticeable in the scrap metal industry. The association adopted a resolution providing for assisting by all legal means in the prosecution of such cases.

U. S. Rubber Reclaiming Moves

New and larger quarters in the New York Central Building, 230 Park avenue, New York City, were occupied on April 8 by the U. S. Rubber Reclaiming Company for its executive offices. The company was formerly located at 100 East 42nd street.

New Goodyear Factory Branch

A new three-story building will be constructed at Dallas, Tex., for the Goodyear Tire & Rubber Company factory branch there. The building, which will be located on Perry avenue, will cost $108,000.

Synthetic Rubber Factory

Percy W. Limouze, as receiver of the Gibraltar Tire & Rubber Company, has sold to the Synthetic Rubber Company the brick factory at 13th street and Hudson Boulevard, West New York, N. J. The plant has a frontage of 100 feet on the boulevard and 212 feet along 13th street, and was formerly used by the Gibraltar company as a reclaiming factory. The Synthetic Rubber Company plans to spend $65,000 to renovate the building.

Samson Sales Increase

The Samson Tire & Rubber Company, Los Angeles, Cal., reports gross sales for the month of February of $585,482, compared with sales of $460,771 for February, 1928, an increase of 27 per cent. For the same period the company reports a gain in tire units produced of over 50 per cent as compared with last year. Sales for the first two months of 1929 show a gain of 29 per cent in dollar value and more than 50 per cent in units over a year ago.

A. C. S. Meeting Program

The complete program for the Rubber Division of the American Chemical Society at the 77th meeting of the society in Columbus, O., has not as yet been prepared for release. The meeting will be held on April 30 and May 1, and the Rubber Division dinner will be on the night of May 1. Among the papers to be read will be discussions of "The Testing of Automotive Rubber Parts Assembled Under Compression," by Franz D. Abbott, Firestone Tire & Rubber Company; "The Transformation of Energy by Rubber," by Ira Williams, Grasselli Chemical Company; and "The Effect of the Presence of Magnesium Oxide or Zinc Oxide on the Products of the Destructive Distillation of Natural Rubber," by Thomas Midgley, Jr., and Albert L. Henne, Baker Laboratory, Cornell University.

L. H. GILMER ORGANIZING NEW RUBBER GOODS FIRM

Ludwell H. Gilmer, founder and chairman of the board of the L. H. Gilmer Company of Tacony, Philadelphia, Pa., has severed his connection with that firm, except as a director, in order to head a new corporation for the manufacture of endless belts. The new company will be known as the Gilmer Corporation.

Headquarters for the Gilmer Corporation will be established at Detroit, Mich., with a factory at Auburn, Ind., where it is planned to start production on April 15. Attention will be centered at the start on automobile fan belts and other moulded rubber products.

General Tire Sales Higher

Sales of the General Tire & Rubber Company, Akron, O., for the first quarter of its fiscal year ending February 28 showed a substantial increase over the same period of last year despite lower selling prices. This increase was gained through heavier early shipments to retail distributors inasmuch as the General company does not seek original equipment tire business. The capacity of the General factory has recently been increased by one-third in larger tires and by one-half in smaller sized tires through additions to the Akron plant.

ELEVEN RUBBER STOCKS DECLINE TO NEW LOWS

During the wave of selling that ensued on the various stock exchanges at the end of March, eleven issues of prominent rubber manufacturing companies sank to new low levels for 1929. The majority of these, however, have since shown a tendency to regain their losses and closed the fortnight with prices considerably above those of the low points touched on March 26.

Before the general decline, Goodyear touched a new high of 154½, but broke sharply with the others and closed at 135. Kelly-Springfield dropped to as low as 11 on March 26, but rebounded to 16 a day or two later. Miller preferred was the only issue to show a net gain at the end of the two-week period of trading.

Goodyear Appoints New Sundries Sales Heads

PAUL COSTE

M. K. MOORE

J. G. SCALES

REORGANIZATION of the sundries sales department and division of duties following the resignation of C. M. Piper, former head of the department, have been announced by the Goodyear Tire & Rubber Company. Col. Piper, who had been with Goodyear since 1915, left recently to become special assistant to the sales manager of the Fisk Rubber Company, Chicopee Falls, Mass.

Paul Coste, who has been handling rubber flooring and tile sales, has been placed in charge of a separate department to handle this work in the future. M. K. Moore will be in charge of accessories sales, and J. G. Scales will be in charge of repair material sales, both responsible to F. L. Morgan, manager of automobile tire sales.

Late Stock Prices

	Last Price Apr. 3	Mar. 19	High —1929—	Low
Ajax	8⅛	9½	11¼	7⅞
Falls	7½	8	11⅜	5
Faultless	36	36	39⅞	33
Firestone	253	275¼	285	220¼
do. 6% pfd.	110	110	111	108¼
Fisk	12	16¼	20⅛	11¾
do. 1st pfd.	60¼	66½	82½	66½
General	290	298	298	236
do. pfd.	100	101	102	99½
Goodrich	90⅝	96⅛	105¾	83⅝
do. pfd.	113	113	115⅛	113
Goodyear Com.	135	149	154½	112
do. pr. pfd.	103	104¼	104⅞	101¾
Hood	22	24½	27¼	21
India	61	65	73	39
Intercontinental	10½	11¾	14¼	10
Kelly Springfield	15⅞	19	24	11
do. 1st pfd.	—	93	100	88
Lee	19	21	25	18½
Miller	25½	28¼	28¾	22½
do. pfd.	81	78⅞	83	70¼
Mohawk	53	59	66	53
do. pfd.	87¼	87½	90½	81
Norwalk	5	5⅜	6⅛	5
Seiberling	51	58½	65	47½
do. pfd.	105¼	106½	107⅞	105
U. S. Rubber	55	63⅞	65	42
do. pfd.	83½	89¾	92½	77

Names in the News

HARVEY S. FIRESTONE, president of the Firestone Tire & Rubber Company, has established a fund for an Ohio fellowship at Johns Hopkins University, Baltimore, Md., in connection with a five-year experiment in chemistry instruction to be conducted at that institution. The fellowship amounts to $1,000 a year and will be given to a chemistry student in some Ohio college who shows exceptional ability.

KNUT ECKENER, son of DR. HUGO ECKENER, commander of the *Graf Zeppelin*, is to start work in the near future with the Goodyear-Zeppelin Corporation at Akron, O. While the exact position he will occupy has not as yet been announced, he is a skilled dirigible engineer, and possibly may be placed in charge of some part of the construction of the two dirigibles which Goodyear will build for the United States Navy.

JACK LIVINGSTONE, sales manager of the Firestone Tire & Rubber Company of Canada, was a speaker before the members of the Kiwanis Club of Montreal several weeks ago and made a talk on the history of rubber from its first discovery. He concluded by predicting that eventually rubber floors and rubber clothes would become universal and that even houses would be built of rubber, or of some rubber substance mixed with straw or other materials.

W. F. VIEH, accountant of the India Tire & Rubber Company, Akron, O., spoke on the subject of "Some Financial Problems of the Rubber Industry" on March 20 before the Cleveland chapter of the National Association of Cost Accountants.

LIEUTENANT KARL L. LANGE, formerly of the United States Naval air station at Lakehurst, N. J., the only American outside of government service to hold a rigid airship qualified pilot license, has joined the staff of the Goodyear-Zeppelin Corporation at Akron as a pilot. He will be given command of one of the new Puritan type airships now under construction at the Goodyear plant and until those ships are completed will give instruction in lighter-than-air student classes.

HUGH ALLEN, counsel, and W. C. YOUNG, operations chief of the Goodyear-Zeppelin Corporation, were speakers at the aviation progress dinner held on March 22 by the Columbus Real Estate Board, Columbus, O.

W. J. LEE of the technical department of the Goodyear Tire & Rubber Company of California, was a speaker at the meeting of the Vermont-Vernon Business Association held last month at Los Angeles, Cal. He predicted a prosperous future for the Los Angeles rubber industry and invited the members of the association to visit the Goodyear coast factory.

BAKER RESIGNS POST AS MILLER ADVERTISING MAN

H. R. Baker, for the past seven years advertising manager of the Miller Rubber Company, Akron, O., has announced his resignation to take effect April 15, in order to become vice-president of the Gardner Advertising Company of St. Louis and New York. Previous to joining the Miller organization in 1920, Mr. Baker was a member of the advertising and publicity staff of the Goodyear Tire & Rubber Company. He organized the Akron Advertising Club and was its first president.

William F. Pfeiffer, president of the Miller Rubber Company, declared his regret at

H. R. BAKER

accepting Mr. Baker's resignation and stated that the appointment of a successor to the position would be deferred until L. C. Rockhill, vice-president in charge of sales, returns from the business trip he is now making through the west.

A native of Xenia, O., Mr. Baker studied at Lafayette College and Princeton University from which he was graduated in 1912. While at college he served as director of children's work for the Evangelistic Committee of New York, and after graduation worked three years as assistant secretary of the Travelers' Aid Society of that city. He later served as assistant secretary-treasurer of the League to Enforce Peace and enlisted in the naval reserves during the war. He is a thirty-second degree Mason, Knight Templar.

In his new capacity, Mr. Baker will establish headquarters at Akron and have charge of territory from Chicago to Pittsburgh and from Detroit to the south. The Gardner Advertising Company was organized 21 years ago and includes among its clients such organizations as the Timken Roller Bearing Company, Pet Milk Company, Frisco Railroad, and Certain-teed Products Corporation.

CHARLES A. SOCH, who recently resigned his position as chemist with the Overman Cushion Tire Company, Belleville, N. J., is now chief chemist for the Swinehart Tire & Rubber Company, Akron, O.

GILBERT K. TRIMBLE, until recently connected with the Seiberling Rubber Company, in compounding, factory, service and development work in the new products division, is now chief chemist of the Midwest Rubber Reclaiming Company, East St. Louis, Ill.

J. C. MANGELS of the Goodyear Tire & Rubber Company will go to the new factory at Gadsden, Ala., to take charge of the compounding, the chemical and physical laboratories, and fabric testing. BERT MORGAN of the Akron plant will head the flying squadron at Gadsden, and O. A. ROBERTS will have charge of the compounding room. H. L. ARTZ of the Akron efficiency department has been named head of the efficiency department at Gadsden, while W. J. MCCAULEY of the traffic department has been appointed traffic manager of the southern plant. All have been associated with Goodyear from seven to sixteen years.

CHARLES R. WEIR, manager of the Columbus, O., branch of the United States Rubber Company, spoke before the Mercator Club of that city on February 26. His topic was "The Romance of Rubber."

WILLIAM J. B. STOKES of the Thermoid Company and the Joseph Stokes Rubber Company is spending the month of March in St. Augustine, Fla. He is accompanied by Mrs. Stokes.

HAROLD BELL, of Dallas, Tex., has been appointed district representative for the southern territory for the Hamilton Rubber Manufacturing Company, Trenton, N. J. Other new representatives who will handle the Victor-Springfield line of tires and tubes for the company are H. R. SMITH of Columbus, O., who will cover Ohio, Indiana, Kentucky and West Virginia, and G. M. YOUNGKRANTZ of Chicago, Ill., who will act as agent for that section.

WILLIAM H. SAYEN, JR., president of the Mercer Rubber Company, Hamilton Square, N. J., recently spent several weeks on a business trip through the west and northwest.

CHARLES F. U. KELLY, for many years prominent in the tire and automotive industries, has joined George Harrison Phelps, Inc., national advertising agency of Detroit, Mich., in the capacity of vice-president. Mr. Kelly's merchandising experience, dating back to the early days of the automobile industry, includes important posts with the B. F. Goodrich Company, the Continental Rubber Works and other leading firms.

Rubber News Around the World

NEW COMPANY WILL MAKE SPENCER-MOULTON TIRES

The Trowbridge Tire & Rubber Co. (1929), Ltd., has just been incorporated in England to become the sole manufacturers of Spencer-Moulton tires. The company is capitalized at £175,000 ($875,000) divided into 700,000 ordinary shares of 5s. each, of which 650,000 have just been issued, making the issued capital £162,500 ($812,500). The vendor company, a private undertaking, is disposing of the whole of its business, including its factory and equipment at Trowbridge, to the new concern.

The business was founded over 21 years ago, and was carried on by George Spencer Moulton & Co., Ltd., as a department of that firm until February, 1928, when it was acquired by the present vendors. The new undertaking will continue to specialize in the manufacture and sale of solid and pneumatic tires for commercial vehicles, selling them under the well-known trade name of Spencer Moulton. Although the company acquires the exclusive right to use the words "Spencer Moulton" on tires and tubes, it becomes bound not to use the words in connection with any other goods.

The tires are to be sold on two bases, outright at agreed sums, or on mileage hiring contracts, under which an agreed sum per mile is paid, according to the mileage for which the tires are used. Extensive experimental work has placed the company in a position to produce solid and pneumatic tires of the highest class, from which good results are being obtained.

The factory at Trowbridge is located in the heart of a rubber manufacturing district, and an abundant supply of skilled labor is available. It consists of brick buildings with a floor space of 34,000 square feet. The purchase price of the business is £60,000 ($300,000), the net assets acquired being valued at £70,521 ($352,605). The purchase price is being paid with £35,000 in cash and £25,000 in shares in the new company.

Goodrich Idea Baffles Paris Auto Show Crowd

An exhibit by the French Goodrich Company featuring a tire that rolled back and forth without visible means of support or propulsion and which could be stopped or started by the raising or lowering of a hand before it completely baffled thousands of visitors to the Paris Auto Show. Actually, a new invention combining light rays and electric current was employed to create the mystery.

An electric motor, cleverly concealed, furnished the power that propelled the tire, and a selenium cell, which is not a conductor without the action of infra-red light rays, was arranged so that the rays controlled the current operating the motor. While the rays were not visible, holding the hand, a hat or anything that obstructed them in a certain position would break the circuit and stop the motor and the tire. The display was arranged by Fraser Bryant, sales manager of the French Goodrich Company.

Crimes of the 20th Century

EVERY ENGLISH SCHOOLCHILD KNOWS THAT AN ICE BAG IS AS PURE AND VIRTUOUS AS A
HOT WATER BOTTLE IS SINFUL AND VICIOUS.
IT IS UNTHINKABLE THAT ANY PURVEYOR OF THESE GOODS COULD BE BLIND TO THIS MORAL DISTINCTION
YET A SHOPKEEPER OF NORBURY (OF ALL PLACES, FORSOOTH!)
WAS SO LOST TO ALL SENSE OF RIGHT AND WRONG THAT HE WAS—
— SEEN SELLING A HOT WATER BOTTLE AT AN HOUR AT WHICH ONLY ICE-BAGS WERE ALLOWED.
THE NATION WAS SAVED FROM PANIC ONLY BY THE
DORA
PROMPT ACTION OF THE AUTHORITIES
THE MISCREANT, BEING OBVIOUSLY UN-ENGLISH WAS BANISHED TO A TROPICAL ISLAND, WHERE HE CAN DO AS HE LIKES WITH HOT WATER BOTTLES

THAT England has her own troubles with the enforcement of certain prohibitions is indicated by this cartoon printed in the London *Evening News* last month, commenting on the Defense of the Realm Act (D. O. R. A.), a war time survival, which prohibits the sale of hot water bottles after 8 P. M. It is, however, legal to sell ice bags after that hour, as the artist brings out.

FISK RUBBER COMPANY SEEKS FOREIGN MARKETS

The Fisk Rubber Company will extend its marketing agencies to Cuba, the Philippine Islands and Mexico through the formation of three new subsidiaries recently incorporated under the laws of Delaware. These companies are the Compania Gomas Fisk de Cuba, the Compania Llantas Fisk de Mexico, and the Fisk Rubber Company of the Philippines, and the outstanding stock in each will be held by the parent concern.

This is reported as the first step on the part of the Fisk Rubber Company to organize the tire marketing subsidiaries throughout the world. It is understood that the Fisk management will operate the three companies as direct subsidiaries, while the foreign marketing organization of the company heretofore has been made up of sales agencies, of which it has a large number in various foreign countries.

Synthetic Rubber Patents

The German dye trust has been granted British patents on its synthetic rubber under British patent numbers 283,840 and 283,841. The process involves an emulsification and polymerization in the presence of oxygen or oxidizing agents of butadiene, dimethylbutadiene, and isoprene. Emulsifying agents may be soap solutions, albuminous substances, salts of sulfonated fatty acids, saponin, water-oil suspensions, etc. The addition of a small quantity of potash assists the action of the oxidizing agents.

Belgium Leads Tire Markets

During the month of February, Belgium stepped into the lead among foreign customers for American automobile casings with total shipments of 37,224 casings valued at $334,255. Argentina, normally the leader, dropped to second place with exports of 33,152 casings worth $323,033, but remained in first place as an export market for inner tubes. The February total of casing shipments was 297,940, valued at $3,103,932. This is exclusive of exports of 25,209 truck and bus casings 6 inches or larger in size, worth $671,851.

CATALPO
for
Footwear

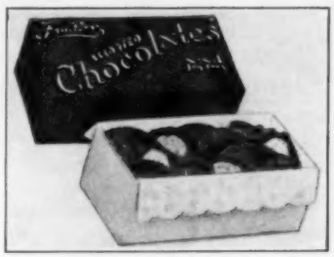
Rubber Goods and Specialties

"Rainbo" Balloon

Under the name of Rainbo balloon, the Oak Rubber Company, Ravenna, O., is now marketing an item in this line with a distinctly original treatment. The entire balloon is covered with stripes or bars of contrasting color, which blend artistically into one another to give a true rainbow effect. This new balloon is made in both transparent and compound, or opaque, numbers. On the compound balloon the decorative bars are on the outside and consequently make an attractive appearance even when deflated in the box. The transparent balloons are colored on the inside, and while they have a brilliant, glossy finish inflated, the color effect does not show when the balloons are deflated. This type is intended for street vendors who peddle the balloons inflated.

Shadow Boxing Ball

Intended as a substitute for shadow boxing, this Yale shadow ball is being manufactured and marketed by the Moneco Company, 2 Eld street, New Haven, Conn. It is made with a heavy leatherette cover and a pure gum bladder inside. The ball is attached to the user's head by means of a heavy elastic extending to the adjustable head band. When the ball is punched, the same action is obtained as in both bag punching and shadow boxing. The ball, which is easily inflated, is also made with a sheepskin cover, at a higher price. It is advertised as the invention of H. O. ("Buffalo") Costello, athletic instructor and boxing trainer.



Sponge Rubber Chocolates

Attractively decorated boxes similar to those used for bon-bons by candy manufacturers are employed to hold this assortment of sponge rubber chocolates put up by the Faultless Rubber Company, Ashland, O. The box is covered with a dark red glazed paper with the inscription "Faultless Assorted Chocolates and Bon Bons" embossed in black and gold on top. The box contains eleven assorted sponge rubber chocolates, two of which are wrapped in tinfoil. Many confectionery and drug stores use these rubber candies in window displays instead of the actual chocolates, which would be spoiled by such exposure.

Ignition Protector

A rubber shield to fit over the distributor and protect it against rain, snow, water, moisture, oil and dust accumulations is the newest automobile accessory to be manufactured and marketed by the Seiberling Latex Products Company, Akron, O. According to the manufacturers of this device, there is considerable loss of current due to moisture even though the driver does not notice that he is getting an intermittent miss. The Vaughn ignition protector, as the item is called, is made so as to permit air to enter, thus preventing condensation inside. It is made in five sizes for various types of cars.

"U. S." Royal Transmission Belt

Constructed of hard duck with a cut, foldless edge, the "U. S." Royal transmission belt is the newest addition to the line of the United States Rubber Company, 1790 Broadway, New York City. The hard duck used in the construction of the belt gives less "stretch," as well as additional strength, qualities particularly valuable for high speeds and for suddenly applied loads. Another advantage of the duck construction is that it holds the fasteners better. The non-blooming surface is said to give a tractive power which compares with that of a razor strop, while at the same time being impervious to oil, moisture, acid fumes and similar influences.

Inflated Swimming Float

The Rubber Patents Corporation, Houseman Building, Grand Rapids, Mich., has announced that it will place on the market an entirely new air inflated swimming float and ring for both adults and children. These new items will be made from special composition rubber and will include the Carter patented rubber valve which is used in the firm's Ball-O-Fun and which retains the air indefinitely without tying and eliminates the use of the metal valve. This rubber valve, shown in the illustration, is used only on products of the Rubber Patents Corporation.

Fisk Rugged Tire

In the Fisk Rugger DeLuxe tire, the Fisk Rubber Company, Chicopee Falls, Mass., has made its addition to the growing list of "super" casings. The manufacturer states that this tire has a full sized air chamber larger than that of ordinary six-ply tires. Cords of long fibre cotton, equidistant and parallel, under equal insulation of rubber, and with no cross threads to bind the cords together are made by the Fisk "all-cord" process to eliminate internal friction and reduce rolling resistance. The tire has a multiple cable bead in which each cable is a unit in itself to give increased bead strength and eliminate bead blowouts. The casing is claimed to be perfectly balanced with the tread shoulder of the right thickness to give perfect flexibility without "hinging" and "cracking."

Current Crude Rubber Items

TRADING NEARS RECORD ON RUBBER EXCHANGE

March was one of the biggest months in volume of trading and in the value of contracts turned over in the history of the Rubber Exchange of New York. Futures contracts representing 65,607½ long tons with a value in excess of $35,000,000 were traded in during the 24 days the exchange was open. The daily average of sales was 2,733 tons.

This volume has been exceeded only twice before, in March, 1928, and in January, 1929. In the former month the volume was 32,491 contracts and in the latter month 31,647 contracts, as against 26,243 contracts for March, 1929.

Prices during the past fortnight fluctuated over a wide range, closing two cents a pound lower. The spot quotation on March 19 was 24.20 cents a pound as compared with 22.20 on April 3. On March 25 the spot price sank to a low for the period of 21.50 cents, the lowest for the market since January 23. Quotations have moved up and down on successive days in response to speculative bullish and bearish interests, and the final trading days found the general tone fairly steady and subject to only minor fluctuations.

The table below indicates the daily changes in prices on the exchange and the daily volume of sales.

Airplane Sprays Combat Mildew of Rubber Trees

Airplanes are being used to combat rubber tree mildew by dusting the trees with sulfur obtained from local volcanoes in Java, according to the Department of Commerce. Experiments by the Rubber Experiment Station at Buitensorg are said to have demonstrated that the sulfur treatment would kill the mildew on trees within 24 hours.

The volcanic sulfur is contained in a funnel-shaped tank at the bottom of the plane. Inside the tank is a motor-driven apparatus for stirring the sulfur dust, which must be kept dry and loose to prevent lumping.

T. L. Carnahan Released

T. L. Carnahan, American mining man and brother of George Carnahan, president of the Intercontinental Rubber Company, who was seized by Mexican bandits on March 18 and held for a ransom of $15,000, was released after payment of $5,000, it was learned on March 30. He is now at La Noria in the state of Zacatecas. Ambassador Dwight W. Morrow was informed that Mr. Carnahan obtained his release on March 28 when federal forces surprised the rebel troops who had been holding him for ransom.

DIVIDENDS DECLARED BY TWO RUBBER COMPANIES

Preliminary reports recently announced by two allied companies, the Highlands and Lowlands and the Ayer Kuning, are regarded as favorable in view of the conditions in the rubber producing industry during 1928. The net profits of the Highlands and Lowlands were £34,094, a reduction of £20,828, and the dividend rate has been lowered from 15 to 10 per cent. The reduced dividend will absorb about £31,000, and the directors have placed £5,000 to reserve and carry forward a total of £28,663.

Ayer Kuning earnings were slightly more satisfactory in comparison, showing a decline of only 26 per cent from £27,746 to £20,539 in 1928. Shareholders received a dividend of 12½ per cent as against 17½ per cent in the previous year, and £5,000 were appropriated for the company's reserve.

Malayan Estate Stocks Drop

Stocks of rubber on estates of 100 acres or more in Malaya have showed a steady decline over the past few months as indicated by the regular census reports, while stocks in the hands of dealers outside of Singapore and Penang have gradually increased. Estate stocks were reported at 23,761 tons at the end of February, as compared with 28,509 tons on January 31 and 34,925 tons on December 31. Stocks held by dealers were figured at 16,128 tons on February 28 as against 14,883 at the end of January and 12,360 tons at the end of December.

Rubber Export Duty Fixed

A proclamation recently issued by the government of Trengganu, Non-federated Malay States, fixes the duty to be paid on Para rubber exported from that state at 2½ per cent of the value, calculated on a price to be fixed from time to time by the superintendent of customs.

Closing Prices on Rubber Exchange of New York, Inc.

FROM MARCH 20 TO APRIL 4, 1929

		Spot	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales*
Mar.	20	22.80	22.80	22.90	23.10	23.20	23.30	23.50	23.60	23.70	23.70	23.90	24.00	——	2,549
	21	23.40	23.60	23.80	24.00	24.10	24.20	24.30	24.40	24.50	24.50	24.60	24.70	——	1,798
	22	23.20	23.20	23.30	23.40	23.50	23.70	23.80	23.80	24.00	24.10	24.20	24.30	——	833
	23	22.00	22.10	22.20	22.40	22.50	22.60	22.70	22.80	22.90	23.00	23.10	23.20	——	1,030
	25	21.50	21.50	21.60	21.80	21.90	22.10	22.20	22.30	22.50	22.60	22.60	22.60	——	1,618
	26	22.30	22.30	22.40	22.80	23.00	23.20	23.30	23.40	23.60	23.70	23.80	23.90	——	1,958
	27	22.10	22.10	22.20	22.30	22.50	22.70	22.90	23.10	23.20	23.40	23.50	23.60	——	842
	28	22.80	22.80	23.00	23.20	23.40	23.50	23.70	23.80	23.90	24.00	24.20	24.30	——	1,166
Apr.	1	23.00	23.00	23.10	23.30	23.50	23.70	23.90	23.90	24.00	24.10	24.10	24.20	24.30	361
	2	23.00	23.00	23.10	23.40	23.60	23.70	23.90	23.90	24.00	24.10	24.20	24.30	24.40	1,061
	3	22.20	22.20	22.30	22.50	22.70	22.80	22.90	23.00	23.10	23.20	23.40	23.50	23.60	957

*In lots of 2½ tons each

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SWAN RIVER TIRE COMPANY REPORTED IN NEW MERGER

That a merger of the Swan River Tire & Rubber Company, Bucyrus, O., with another rubber company which may later form an additional merger with three other companies manufacturing the same line of products is now being contemplated is reported in local industrial circles. Under the terms of the proposed preliminary merger, the new company joining with the Swan River would set aside a $100,000 operating fund to relieve ten local guarantors of their obligations totaling $35,000.

The merger is said to be sponsored by O. B. Keplinger, former president of the Swan River company and one of its founders. Mr. Keplinger retired from his position at the head of the company when it was recently reorganized and merged with the old Bucyrus Rubber Company with the ten local business men putting up a guarantee of operating expenses. The new proposal was under discussion at a meeting of the Swan River board of directors last month and will be considered further when more details are available.

Samson Tire Managers Confer

Branch managers of the Samson Tire & Rubber Corporation held a three-day conference last month at the home office of the company in Los Angeles, Cal. The conference was under the supervision of B. F. Schleicher, executive vice-president, and was presided over by W. W. Drum, director of sales.

Falls Rubber Company Busy

The Falls Rubber Company, Cuyahoga Falls, O., is running day and night shifts in order to keep its production up with recent demands. The company is said to be between 30 and 60 days behind in orders for the new Roadmaster super tire, according to W. P. Cline, vice-president. The plant is now being operated at double its normal capacity.

Collette Plant in Operation

Manufacture of tires at the plant of the Collette Cushion Tire Company, Manitowoc, Wis., was started on April 1. The firm was organized four months ago for the manufacture of heavy duty truck tires and is specializing in a new demountable cushion tire with V-shaped openings to eliminate vibration and keep the tire cool.

CATALPO
for
Frictions

Fine Opens New York Office

The Fine Rubber Company, Malden, Mass., rubberizers and manufacturers of single and double texture rain clothing, have opened a sales office and show room at 132 West 31st street, New York City. The company manufactures a full line of boys' and men's, police and firemen's black rubber calendered coats in addition to its waterproof clothing for boys, girls, men and women.

Stedman Products Dividend

The Stedman Products Company, South Braintree, Mass., manufacturer of rubber flooring, has declared its 42nd consecutive quarterly dividend of $1.75 a share on the preferred stock of the company through action by the board of directors. The dividend was payable April 1 to stockholders of record at the close of business on March 25

GOODYEAR BALLOON WILL COMPETE IN COMING RACE

The Goodyear Tire & Rubber Company will have one entry in the annual national balloon race which is to start from Pittsburgh, Pa., on May 4. Ward T. Van Orman, world's champion balloonist, who was forced out of the 1928 international race by injuries suffered when his balloon was struck by lightning, probably will again pilot the Goodyear entry.

Ten other entries will be sponsored by the United States Army, the United States Navy, the Detroit Balloon Club, and Captain Harry E. Honeywell, of St. Louis. The elimination race committee intends to select a twelfth contestant from among four applicants. The Akron Business Club may also have an entry in the race.

IT PAYS TO MICRONIZE

PROTECTION

As every manufacturer knows, a hose wears out even more quickly from lack of use than from excessive service.

The inactive hose must be protected from sunlight, oil and grease, all of which spell deterioration. Allowance must also be made for stubborn kinks and the strain upon the hose when it has been coiled and hung up.

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—which reduces deterioration, strain and the destructive forces of foreign elements and sunlight to a minimum.

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FOUR RUBBER COMPANIES FORM NEW AMALGAMATION

Details have been released at Kuala Lumpur of an amalgamation of four of the best-known rubber producing companies, the Allenby, Balgownie, Connemara and Kundong estates. A new company is to be formed under the title of Connemara United, which will acquire the four concerns. The total area to be controlled by the group will be 6,560 acres, of which 5,534 acres are planted.

The capitalization per planted acre of the new company is £45. This planted area includes approximately 1,000 acres of immature rubber on the Balgownie and Connemara properties.

The first directors will be Eric Macfadyen, R. C. M. Kindersley and C. Ritchie. The new company will be formed in London with an authorized capital of £500,000, divided into 5,000,000 two-shilling shares. Of these 675,268 shares will be allotted as fully paid to the Allenby Company, 668,222 shares to the Balgownie Company and 602,770 shares to the Kundong Company.

Watson Reaches High Output

John Warren Watson, president of the John Warren Watson Company, Philadelphia, Pa., announced on March 27 that his organization is now producing "rubber flow" stabilators at the rate of 8,000 a day and has orders for several months at the same production rate. The Watson stabilator for automobiles is made with a specially devised rubber compound that flows over polished steel surfaces built into the mechanics of the apparatus.

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, APRIL 3, 1929

COTTON

WITH the advent of more favorable climatic conditions throughout the south, the cotton market has taken a reactionary trend and prices at the end of the fortnight were rather lower than at the beginning of the period. Despite the downward tendency of prices, however, authorities consider that there has been no fundamental change in the cotton situation, but that liquidation and short selling combined with high money rates have been the real factors in forcing quotations down.

Present indications are that the world carry-over of American cotton at the end of July will be reduced to about 4,250,000 bales as against 5,078,000 bales last year. Market students believe, therefore, that a crop of 15,000,000 bales in 1929 will be necessary to avoid higher prices in view of the current high consumption. The textile situation is apparently healthy while neither the supply nor the new crop outlook is entirely satisfactory.

High, low and closing prices quoted on April 3 were as follows:

	High	Low Apr. 3	Close	Close Mar. 20
April	——	——	20.20	——
May	20.56	20.30	20.30	20.82
July	20.00	19.77	19.77	20.33

Tire Fabrics

Several heavy orders for carded peeler cords were placed during March with prices remaining unchanged to slightly higher. Tire fabric consumption has, of course, broken all quarterly records during the first three months of the year in common with rubber consumption in tires. Demand continues good, and leading tire manufacturers are announcing expansions of their own mills. Late prices follow:

CORD			
Peeler, carded, 23/5/3	lb.	.47½@	.48½
Peeler, carded, 23/4/3	lb.	.48½@	.49½
Peeler, carded, 13/3/3	lb.	.45 @	.45½
Peeler, carded, 15/3/3	lb.	.45½@	.46
Egyptian, carded, 23/5/3	lb.	.54 @	.54½
Egyptian, combed, 23/5/3	lb.	.58 @	.59
CHAFERS			
Carded, American, 8 oz.	lb.	.40½@	.41½
Carded, American 10 oz.	lb.	.41½@	.42½
Carded, American, 12 oz.	lb.	.41½@	.45
Carded, American, 14 oz.	lb.	.40 @	.46
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.41 @	.46
Carded, American, 10¼ oz.	lb.	.41 @	.46
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.47 @	.48
Carded American, 17¼ oz. 10-ply	lb.	.40 @	.41

Sheetings

Trading in the sheetings market has been slightly more active during the latter part of March. Price quotations, as reported by the Textile Brokers Association, Inc., were slightly lower at the end of the fortnight. Latest prices were as follows:

40-inch, 2.50-yard	yd.	@	.13
40-inch, 2.85-yard	yd.	.11⅝@	.11¾
40-inch, 3.15-yard	yd.	@	.11⅞
40-inch, 3.60-yard	yd.	@	.09¾
40-inch, 3.75-yard	yd.	@	.08⅝
40-inch, 4.25-yard	yd.	.07½@	.07⅝

Ducks

Certain mills have been quoting advances on hose and belting duck, asking 38½ cents a pound, although in some cases labor troubles have hindered their securing this level due to their quoting this price on goods some weeks after the troubles are ended. The actual market, however, is 38 cents a pound, although many houses have stocks of belting duck purchased at lower figures. Merchants who covered some weeks back when goods were obtainable at low prices are now taking a fair profit on both belting and other lines. Latest price quotations were as follows:

Belting and Hose	lb.	@	.38
Enameling	lb.	.36½@	.38
Single filling	lb.	.14¾@	.16½
Double filling	lb.	.17½@	.18½

RECLAIMED RUBBER

Consumption of reclaimed rubber continues in heavy quantities, and the demand from rubber factories shows no sign of slackening. Absorption by American manufacturers during the first three months of 1929 has set a new quarterly record for the industry, and stocks on hand are low in view of the volume of use. Prices are not quite as strong as a month ago in view of the lowered quotations for crude rubber. The latest quotations for reclaims follow:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.13 @	.13½
Super-Reclaim No. 2 Black	lb.	.12 @	.12½
High Tensile Red	lb.	.13 @	.13½
Shoe			
Unwashed	lb.	.07¼@	.07½
Washed	lb.	.10 @	.10¼
Tube			
No. 1 (Floating)	lb.	.14 @	.14½
No. 2 (compounded)	lb.	.11 @	.11½
Tires			
Black, washed		.09¾@	.10¼
Black, unwashed		.08 @	.08½
Black, selected tires	lb.	.08½@	.09
Dark Gray	lb.	.10 @	.10½
Light Gray	lb.	.12 @	.12½
White	lb.	.13 @	.13½
Truck, Heavy Gravity	lb.	.07 @	.07¼
Truck, Light Gravity	lb.	.07½@	.07⅝
Miscellaneous			
Mechanical Blends	lb.	.07 @	.07½
Red	lb.	.12½@	.13

Scrap Rubber

All grades of scrap rubber sold well during March with prices considerably firmer in tone. Spring collections have been fairly high, but the demand from reclaiming plants does not appear to be slackening. Mixed auto tires are somewhat weaker at the higher price, but inner tubes remain steady at advanced levels. Late prices follow:

(Prices to Consumer)

Auto tire peelings	ton	42.50	@45.00
Standard White auto	ton	47.50	@50.00
Mixed auto	ton	26.00	@27.00
Bicycle tires	ton	20.00	@22.50
Clean solid truck tires	ton	25.00	@27.00
Boots and shoes	cwt.	1.55	@ 1.60
Arctics, untrimmed	lb.	.00¾@	.00⅞
Inner tubes, No. 1	lb.	.07½@	.07¾
Inner tubes, No. 2, compounded	lb.	.04⅝@	.04¾
Inner Tubes, Red	lb.	.05⅛@	.05¾
Air Brake Hose	ton	34.00	@35.00
Rubber Hose	ton	17.50	@20.00

CRUDE RUBBER

ACTIVITY in the crude rubber market during the past fortnight has been alternately bullish and bearish, with prices closing slightly more than two cents below those of March 19. The situation at the close, however, was regarded as technically improved and better in general sentiment. Much more caution on the part of bearish interests is apparent, and indications point toward advanced prices in coming trading days.

The declines of the closing days disclosed an improved demand for actual rubber, and more than one of the larger tire manufacturers displayed interest in buying at the lower prices. Steadily heavy consumption in rubber factories throughout the country points to an even more improved situation in months to come.

World stocks at the end of February were figured at about 231,000 tons, and no great change should have occurred by March 31. Production and exports from Malaya have dropped off from the figures of December and January, but this is being counteracted to some extent by a slackening up of output at American tire plants.

The general market has been lacking in really important outside feature, although trading has been fairly active. Private cable advices from the East report that planters are not anxious to sell at the recent low levels.

European consumption is expected to show a marked increase this year. Manufacturers in Great Britain, for example, have taken more than 10,000 tons of rubber in the first two months of 1929 in comparison with about 6,000 tons in the corresponding period in 1928. That this will have a noticeable effect upon world totals at the end of the year is fairly certain.

Prices on the New York outside market on April 3 were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot-Apr.	.22 @	.22¼	
May-June	.22½@	.22¾	
July-Sept.	.22⅞@	.23⅛	
First Latex, crepe spot	.22¼@	.22½	
Amber Crepe, No. 2	.20 @	.20¼	
Amber Crepe, No. 3	.19¾@	.20	
Amber Crepe, No. 4	.19½@	.19¾	
Brown Crepe, Clean, thin	.19¾@	.20	
Brown Crepe, specky	.19½@	.19¾	
Liquid Latex, per gal.	1.00		
Paras—			
Up-river Fine	.20½@	.20⅝	
Up-river Medium	Nominal		
Up-river Coarse	.13¾@	.14	
Acre Bolivian, fine	.24 @	.24¼	
Caucho Ball, Upper	.13¾@	.14	
Islands, fine	Nominal		
Centrals—			
Central, scrap	.14½@	.14⅝	
Esmeraldas	.14½@	.14⅝	
Balata—			
Block, Colombia	Nominal		
Block, Cuidad	.50 @	—	

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot-Apr.	@	11 d	
May-June	11⅛@	11¼d	

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	@	11 d	

H. MUEHLSTEIN & CO., Inc.

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, APRIL 3, 1929

PRICES among the rubber chemicals and compounding ingredients have remained practically stable with the exception of slight advances for lithopone and litharge. There have been fractional changes among some of the colors and accelerators, but no general price movement is noticeable because of the firm balance between supply and demand.

Manufacturers of these chemical supplies have been kept as busy as during the first two months of the year in an effort to take care of record production schedules in rubber factories. The slight slackening up at the end of March that may continue into April is not expected to have any significant effect on chemical factory output. All plants are running at a high rate, and completion of expansions of certain companies in the near future will materially increase this already high volume of output.

ACCELERATORS

Organic			
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Aero-X	lb.	.60 @	.65
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolylguanidine	lb.	.42 @	.52
Diphenylguanidine	lb.	.30 @	.36
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde Aniline	lb.	34 @	.44
Grasselerator 102	lb.		
Grasselerator 552	lb.		
Grasselerator 808	lb.		
Grasselerator 833	lb.		
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.62½@	.65
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.35 @	.45
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.50 @	.52½
Tensilac, No. 41	lb.	.50 @	.52½
Thermic F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.26½@	.28½
Thionex	lb.		
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Waxene	lb.	.30 @	.32
Z 88	lb.	.50 @	.60
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.35 @	.40
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.28 @	.31
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.31 @	.38
Reds			
Antimony			
crimson, 15/17	lb.	.44 @	.50
sulfur free	lb.	.52 @	.60
golden 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	1.05 @	—
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.09½@	.10
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Zinc Oxide—French Process			
White seal	lb.	.11⅜@	—
Green seal	lb.	.10⅝@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.15½@	.16½
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	22.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08½@	.12½
Bone Black	lb.	.07 @	.08½
Carbon, compressed	lb.	.08½@	.12½
Carbon, uncompressed	lb.	.08 @	.12
Drop Black	lb.	.06 @	.10
Fumonex	lb.	.06 @	.09
Gastex	lb.		
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.09 @	.13
Velvetex carbon	lb.	.04½@	.06
Blanc fixe dry f.o.b. works	lb.	.03½@	.03⅝
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	10.00 @	22.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.24 @	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.50
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.37 @	.38
Acids, Fatty			
Stearex	lb.	.15½@	.20
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Hexalin	lb.	.60 @	—
Acetate	lb.	.70 @	—
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
dark amber	lb.	.03¾@	.03¾
Pine, steam distilled	gal.	.65 @	.70
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb. bbl.		8.55 @	—
Pigmentar	gal.	.33 @	.41
Solvenol, drums	gal.	.48 @	.50
Tarol, drums	gal.	.30 @	.35
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.33 @	—
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c. l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03¾@	
White crude scale 124/126	lb	.04 @	
Refined, 125/127	lb.	.05¾@	
Refined, 128/130	lb.	.05½@	
Refined, 135/137	lb.	.07¾@	
Refined, 138/140	lb.	.08¼@	
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Albasan	lb.	.70 @	.75
Antox	lb.		
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.64 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03¼@	.03½
Sulfur flour,			
Refined, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags)	cwt.	1.75 @	2.10

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

DESPITE a slight slackening down toward the end of March, it is still believed that the first quarter of 1929 was by far the greatest three-month period in the history of the industry with respect to crude rubber consumption. It is quite possible that domestic absorption during this period may have reached the total of 130,000 long tons.

Any increase in American stocks of crude rubber by the end of March must have been comparatively trifling in view of the high consumption and lower imports. The amount of rubber invoiced to the United States during the four weeks ending March 30, totaled 43,247 tons as against a total of 46,109 tons for the previous four weeks.

Due to the declines on the New York market, the average price of rubber during March was 24.55 cents a pound although the high quotations of the first few days had led to the expectation that the average would equal or surpass the figure of 26.82 cents recorded for March, 1928. The London average price during March was 12.135 pence as against 11.875 in the previous month and 12.736 in March, 1928.

March automobile production, although not definitely calculated as yet, is figured to show a great increase and to set a new record for all time. One authority has made a provisional estimate of 536,600 cars, a gain of 15 per cent over February.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1926:							
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.06	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.							
Apr.							
May							
June							

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	43,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,137	33,702	41,594
Mar.	21,408	36,629	28,385	33,498	32,936	36,141	35,688	
Apr.	19,294	29,085	27,129	34,139	32,696	35,871	32,772	
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	
Nov.	24,950	20,437	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927	1928
Jan./Mar.			96,776	87,609	95,263	94,301	99,216	103,558
Apr./June	65,463	127,360	89,493	75,674	104,099	97,109	103,242	103,500
July/Sept.			55,621	83,813	99,493	93,793	89,210	117,573
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860	117,597
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528	442,227

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Jan. 5	10,035	1,479	1,608	15	13,137
Jan. 12	9,075	1,628	1,807	299	12,809
Jan. 19	9,469	1,231	2,152	211	13,063
Jan. 26	7,163	1,650	2,271	47	11,131
Feb. 2	9,216	1,784	2,612	23	13,635
Feb. 9	8,341	1,066	1,773	65	11,245
Feb. 16	3,771	1,648	1,982	174	7,575
Feb. 23	9,610	559	1,556	55	11,780
Mar. 2	10,200	1,510	3,744	55	15,509
Mar. 9	8,281	1,974	1,974	9	12,238
Mar. 16	7,370	572	1,977	9	9,928
Mar. 23	8,757	754	1,673	.....	11,184
Mar. 30	7,333	923	1,596	45	9,897

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1926																																
September	40¼	40¼	40¼	—	—	—	40¼	40¼	40	40¼	40¼	—	40½	40¾	40¼	40¼	40½	40½	—	41	41½	41¾	42¼	42¼	42¼	42¼	42¼	42¼	42¼	42¼	—	41
October	43	43	—	43¼	42¾	42⅝	—	42½	42½	—	42⅝	—	42½	42¾	43	43⅜	42¾	42½	42⅝	42¾	42¾	42⅝	42⅝	42⅝	42⅝	42⅝	42⅝	42⅝	42⅝	42⅝	—	42½
November	41¾	—	41	41¾	41½	41⅝	—	41½	41½	41½	41½	41½	41¾	—	40¾	40⅝	40½	39½	39¾	39	39	38½	38	38	38	38	37¾	37	37	37	—	38½
December	36⅝	37½	37½	37½	—	37	37	37¾	37	37	42¾	41½	42¾	37¾	37¾	37⅝	38	38	38	38	38	38½	38⅝	39	39	39	39	38½	38	38¼	38¼	38¾
1927																																
January	—	—	38½	39	39¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40	39¾	39¾	40¼	40¼	40½	39¾	39¾	39¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38	38	38	38¾
February	87⅛	87⅛	87⅛	87½	87½	87¾	—	87¾	87¾	87¾	87¾	—	—	88⅜	88⅜	88⅜	88⅜	88⅜	88⅜	88⅜	88½	—	89	89	89	89	89	89	89	89	89	89¼
March	39¾	40	40	40¾	41	40¾	40¾	40¾	40¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41½	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41	41	41¼	41	41
April	41⅛	41	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40½	40½	40½	40½	40¾	40¾
May	40½	40½	40½	40½	41	41	41	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
August	84	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	84	84	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼
Sept.	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼
Oct.	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
Nov.	85	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼
Dec.	40½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼
1928																																
January	—	37½	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾
February	29	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾
March	—	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼	27¼
April	—	17½	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾
May	—	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
June	—	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
July	—	—	18¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
August	19½	19½	19½	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
September	—	—	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
October	—	—	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
November	—	—	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
December	—	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾
1929																																
January	—	22⅝	22	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
February	22	22	22	21¾	21¾	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼
March	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
April	23	23⅛	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼	22¼

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	—
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	—
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	—
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	—
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	—
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	—
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	—
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	—
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Jan.	Feb.	Mar.	Apr.	Day	Jan.	Feb.	Mar.	Apr.
1	—	11⅛	12⅞	11⅛	17	10¼	—	—	—
2	8⅝	11	13½	11¼	18	10⅛	12½	12	—
3	8⅝	—	—	11⅛	19	10⅛	12½	11⅞	—
4	8⅝	10¾	13⅛	—	20	—	12⅜	11½	—
5	8⅝	11	12¾	—	21	10⅛	12½	11½	—
6	—	10⅞	12¾	—	22	10¼	13	11½	—
7	8¾	10⅞	12⅝	—	23	10⅜	13⅛	11¼	—
8	8⅞	10⅞	12⅝	—	24	11	—	—	—
9	9⅛	11	12⅝	—	25	10⅞	13⅛	11⅛	—
10	9⅛	—	—	—	26	11	13¼	11	—
11	9¾	11⅛	12¾	—	27	—	13⅛	11⅛	—
12	10⅜	11	12⅝	—	28	11⅛	12⅞	11	—
13	—	11¼	12⅝	—	29	10⅝	—	—	—
14	10¼	11⅜	12¼	—	30	10¾	—	—	—
15	10	11⅞	12¼	—	31	11	—	—	—
16	10⅛	12⅝	12	—					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	—
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	—
Mar.	20.125	12.736	12.135	Oct.	16.366	8.807	—
Apr.	19.897	8.864	—	Nov.	18.159	8.596	—
May	19.769	8.845	—	Dec.	19.690	8.570	—
June	17.880	9.293	—	Average for Year	18.375	10.656	—
July	16.770	9.312	—				

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Mar.	Apr.	Day of Month	Mar.	Apr.	Day of Month	Mar.	Apr.
1	20.70	20.75	11	21.45	—	21	21.35	—
2	20.80	20.75	12	21.35	—	22	21.10	—
3	—	20.40	13	21.45	—	23	21.05	—
4	20.90	—	14	21.45	—	24	—	—
5	21.30	—	15	21.55	—	25	20.80	—
6	21.15	—	16	21.35	—	26	20.75	—
7	21.40	—	17	—	—	27	20.85	—
8	21.65	—	18	21.05	—	28	20.95	—
9	21.65	—	19	21.15	—	29	—	—
10	—	—	20	21.25	—	30	—	—
						31	—	—

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	—
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	—
Mar.	14.32	19.38	20.19	Oct.	20.22	19.62	—
Apr.	14.75	20.63	—	Nov.	20.22	19.84	—
May	16.07	21.58	—	Dec.	19.58	20.22	—
June	16.85	21.50	—	Average for Year	17.49	19.97	—
July	18.00	21.36	—				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061		49,600	39,324		135,340	153,385	
April	92,757	113,083		38,963	33,986		131,720	147,069	
May	94,563	105,356		44,181	34,374		138,744	139,730	
June	89,250	90,198		47,233	40,001		136,483	130,119	
July	93,469	83,242		40,687	42,304		139,056	125,546	
Aug.	96,148	68,994		40,937	51,875		137,085	120,869	
Sept.	97,829	68,851		37,966	48,566		135,793	117,417	
Oct.	97,453	66,421		42,804	41,571		140,256	107,992	
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	
Mar.	63,913	66,670	63,438	55,647	18,104	13,127	63,055	58,272	
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	
July	71,065	71,515	49,987	52,073	4,258	27,727	63,717	35,429	
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,236	31,440	
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
March	61,978	61,920	61,033	59,644	58,197
April	58,732	58,945	56,819	53,360	
May	52,015	50,837	48,705	44,628	
June	43,716	42,683	41,185	40,083	38,611
July	36,915	35,925	35,238	35,445	
August	34,294	33,649	32,591	32,815	
September	31,933	31,477	32,110	31,884	31,462
October	29,525	27,370	26,477	24,240	
November	22,919	21,494	20,194	18,724	
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	
February	25,389	25,413	24,757	25,005	
March	25,441	25,920	26,442	27,656	28,077

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	——
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	——
Mar.	27,844	20,538	——	Sept.	25,178	14,898	——
Apr.	24,543	16,946	——	Oct.	25,790	12,149	——
May	25,133	17,437	——	Nov.	28,369	29,188	——
June	21,898	18,207	——	Dec.	25,798	32,895	——

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19.700.003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1928			1929		
July	2,209,692	85.9	January	1,835,207	79.4
August	2,318,898	80.2	February	2,265,024	80.8
September	2,315,604	76.9	March		
October	2,114,611	72.2	April		
November	1,213,245	66.4	May		
December	1,101,193	74.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	22,776,000
March	14,890,000	19,302,000	22,464,000	24,041,000	
April	19,013,000	20,848,000	23,371,000	25,712,000	
May	20,459,000	24,213,000	26,579,000	27,355,000	
June	20,724,000	23,803,000	27,799,000	29,022,000	
July	22,879,000	24,752,000	29,784,000	30,960,000	
August	22,323,000	26,912,000	29,779,000	33,148,000	
September	20,177,000	22,929,000	28,409,000	29,691,000	
October	19,826,000	23,973,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	4,965	5,358	6,722	4,932	5,394	6,626	10,432	9,949	13,712
Feb.	5,095	6,363		4,458	5,031		11,075	11,721	
Mar.	6,276	6,819		5,701	5,731		11,583	12,389	
Apr	6,299	6,178		5,701	5,812		12,122	12,717	
May	6,151	6,759		5,657	6,457		12,462	13,024	
June	6,202	6,692		6,253	7,117		12,462	12,162	
July	5,087	6,498		5,973	7,895		11,326	11,157	
Aug.	5,752	7,469		6,393	8,403		10,721	10,034	
Sept.	4,822	6,802		5,717	7,145		9,722	9,765	
Oct.	4,773	7,326		4,799	5,717		9,665	11,520	
Nov.	4,502	6,075		4,306	4,998		10,136	12,579	
Dec.	4,497	5,605		4,165	4,591		10,264	13,624	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	5,337	5,441	6,517	6,016	6,072	7,242	15,585	12,982	15,386
Feb.	5,658	6,895		5,120	5,431		16,075	14,650	
Mar.	7,184	6,231		6,157	5,731		17,096	15,573	
Apr.	7,373	6,661		6,359	5,702		17,801	16,638	
May	6,737	7,168		6,140	6,300		18,389	17,702	
June	6,306	6,953		6,832	7,136		17,858	17,159	
July	5,284	6,674		7,070	8,729		16,004	14,974	
Aug.	6,480	8,343		7,983	9,350		14,664	13,931	
Sept.	5,651	7,103		6,758	7,154		13,511	13,543	
Oct.	5,065	6,929		5,024	5,662		13,539	15,285	
Nov.	4,775	5,592		4,723	5,002		13,585	15,743	
Dec.	4,969	5,184		4,712	4,858		13,692	16,117	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	282,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March							
April							
May							
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[4]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[4]	World Total[5]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	18,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,296	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,505	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,601
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	3,482	981	56,404
Feb.	27,528	11,697	15,831	3,571	1,469	552	445	360	4,078	6,526	10,585	675	2,104	1,098	47,244
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,004	12,905	733	3,178	1,791	65,484
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,581	10,197	557	2,451	1,520	46,928
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,460	1,207	49,967
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	819	1,767	1,113	45,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,708
Sept.	29,895	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,878
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,488	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,830	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,025	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,139	9,335	10,804	3,253	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,488	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,898	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	500*	457	5,295	7,474	10,124	513	1,399	732	44,179*
Nov.	68,135	10,436	57,699	8,005	1,048	772	500*	425	4,950	7,902	7,805	943	1,790	623	92,462*
Dec.	66,763	11,122	55,641	7,848	1,113	744	500*	294	5,120	8,792	10,896	948	2,220	588	94,704*
1929:															
Jan.	52,546	13,415	39,131	8,198		873	500*	461	5,640	8,067	11,076	395	2,134		
Feb.	47,926	12,103	35,823	7,114			500*	495				965	2,104		....

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, and 2,439 in 1927. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, and about ½ ton in 1927. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I" are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, and 84 tons in 1927. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,185	21,920	8,124	21,718	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,498	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,498
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1927	398,488	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,786
1928	404,488	4,846	36,558	37,855	30,891	25,645	12,433		8,430	7,958	2,443	4,418	3,178	3,138	
1927:															
January	41,815	10,192	3,284	2,481	1,986	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,268	3,108	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,458	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,119	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,870
Feb.	30,925	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,812
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	398	54,254
April	35,663	—2,280	2,204	2,719	1,928	2,334	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,823	3,210	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	40,970
June	25,144	—3,031	4,550	2,968	2,632	2,102	984	4,111	348	743	133	346	251	182	41,463
July	28,171	—1,374	2,652	3,387	2,692	2,026	1,598	724	591	895	395	294	175	384	42,610
Aug.	28,827	48	3,587	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,081
Sept.	36,797	4,199	3,524	3,553	2,810	1,837	1,278	20	603	597	345	377	277	235	56,452
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049		776	696	141	527	250	312	
Nov.	33,836	—3,141	3,278	3,694	2,799	2,150	1,340		837	544	31	337	252	282	
Dec.	40,781	8,438	3,633	2,470	2,618	3,026	1,145		755	639	148	435	263	200	
1929:															
Jan.	53,922	11,951		4,711	3,759		1,481		1,061	749	218				
Feb.	61,331	5,179													

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; and to 3,076 in 1928.

BOOK REVIEWS

STATISTICAL SURVEY OF THE RUBBER INDUSTRY IN THE UNITED STATES. By Leo Glucksman and Sylvan Glucksman. Privately published. 1929. 3 vol. 219 pp.

Submitted in partial fulfillment of the requirements for the degree of Bachelor of Business Administration in the School of Business and Civic Administration of the College of the City of New York, this text comprises a comprehensive presentation of 76 graphic charts of every phase of the industry, accompanied by detailed statistics. The sequence of the work is developed logically through the sources of crude rubber, the factors influencing the demand for crude rubber, United States imports of crude rubber, the rubber industries in this country, and United States exports of crude rubber and manufactured rubber products. An extensive bibliography and a detailed cross-index supplement the graphs.

LA GOMME DE BALATA. By A.-D. Luttringer. Published by A.-D. Cillard, Paris. 1929. 56 pp.

According to the publishers, this is the first work devoted entirely to a study of balata gum despite the varied industrial uses of the product. Following an introductory chapter on the origin and collection of balata, the author discusses the different producing countries in South America, the properties and uses of the gum, and the reclaiming of balata. Analytical tables and statistics of price and production complete the volume.

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	845,985	1,064	1,260,043	5,672	2,068,501	3,182	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
Jan.	432	242,339	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	33	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,833
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	233,414	—	—	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	—	399	165,460	451	126,962	147	60,738
Sept.	—	—	60	38,198	2,028	713,736	125	56,768
Oct.	—	—	121	59,358	429	129,065	239	94,570
Nov.	—	—	59	41,119	472	140,116	88	35,409
Dec.	—	—	83	58,311	522	156,154	145	59,911
1929:								
Jan.	—	—	46	30,374	484	152,260	138	62,950
Feb.	—	—	82	70,209	823	255,594	40	19,806

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	200,200	45.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	18,134	52.7	21,941	July	17,278	17,173	45.9	17,305
Feb.	15,291	16,808	49.9	20,848	Aug.	19,049	15,532	36.2	15,881
Mar.	17,069	18,619	52.2	19,558	Sept.	18,693	16,022	40.2	17,991
Apr.	15,393	17,355	52.9	19,283	Oct.	17,182	16,587	41.7	17,026
May	18,945	18,201	48.8	18,137	Nov.	18,245	16,547	44.2	22,399
June	18,781	16,328	43.4	18,709	Dec.	17,728	12,894	41.3	24,785
1929:									
Jan.	18,685	19,453	45.3	24,394	July				
Feb.	18,094	17,846	42.9	23,305	Aug.				
Mar.					Sept.				
Apr.					Oct.				
May					Nov.				
June					Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927.

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